Company name: Ube Industries, Ltd.
Representative: Yuzuru Yamamoto
President and Representative Director
Security code: 4208 (shares listed on First Section of Tokyo Stock Exchange and Fukuoka Stock Exchange)
Contact: Hirotaka Ishikawa
General Manager, IR/PR Department
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Statement Regarding Report by Committee Investigating Improprieties in Quality Checks

TOKYO, June 7, 2018 — Ube Industries, Ltd. today issued a further update regarding its investigation into improprieties in certain quality checks for low-density polyethylene. On February 21, 2018, Ube Industries assembled an investigation committee comprising attorneys without conflicts of interest and an external director, in order to investigate the causes of the improprieties and confirm the validity of recurrence prevention measures. Since that time, the investigation committee has expanded the scope of its investigation to encompass the UBE Group, with Ube Industries lending its full cooperation to the committee's investigation.

On June 5, 2018, Ube Industries received the investigation report issued by the investigation committee, and at the meeting of the Board of Directors of Ube Industries held on June 6, the Directors passed a resolution to release the investigation report (see Appendix).

The investigation report identifies 16 cases of quality-related improprieties (covering 24 products), including low-density polyethylene and limestone aggregate. Ube Industries has already informed the customers concerned that the quality and safety of the products have not been compromised. To date, Ube Industries has received no reports of quality or safety issues from these customers.

Among the 16 cases of improprieties (covering 24 products) there were 14 cases of improprieties (covering 22 products) that involved products other than polyethylene or limestone aggregate. These 14 cases covering 22 products accounted for ¥6.8 billion in net sales in fiscal 2017, equivalent to approximately one percent of the consolidated net sales of Ube Industries.

Ube Industries deeply regrets the inconvenience and concern caused to customers, business partners, shareholders and other stakeholders as a result of these improprieties.

At this point in time, it is not yet known what effect the improprieties may have on the financial results of Ube Industries.

Ube Industries today issued a separate statement regarding recurrence prevention measures and a notice regarding reduction of compensation to Directors, both based on Board of Directors resolutions. Please refer to "Statement Regarding Recurrence Prevention Measures Relating to Improprieties in Quality Checks" and "Notice Regarding Reduction of Compensation to Directors."

Going forward, Ube Industries will ensure that the recurrence prevention measures are executed steadily and will take steps to improve governance and strengthen quality management within the UBE Group, while working to restore the trust of stakeholders.

Status of Informing Customers about Improprieties

Of the improprieties that were identified in the investigation report by the investigation committee, the improprieties in quality checks for polyethylene affected 50 customers. Each of the 50 companies has either confirmed with Ube Industries that the product quality and safety were not compromised, or requested that recurrence prevention measures be verified even though the product quality and safety were not compromised.

The limestone aggregate in question was shipped exclusively to one company, Kanto Ube Concrete Co., Ltd., which has informed its customers that received shipments of ready-mixed concrete manufactured using the aggregate.

The 14 cases of improprieties (covering 22 products) that involve products other than polyethylene or limestone aggregate affect 62 customers, each of which has been informed of the improprieties by either Ube Industries or UBE Group companies. Fifty of these customers have either confirmed that the product quality and safety were not compromised, or requested that recurrence prevention measures be verified even though the product quality and safety were not compromised.

Appendix

Investigation report

To Ube Industries, Ltd.

INVESTIGATION REPORT

June 5, 2018

Ube Industries Investigation Committee

Committee Chairman:	Shuji Oda
Committee Member:	Junichi Ikeda
Committee Member:	Takashi Shoda

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Definition of Terms

Alphabetical order of the terms

Term	Definition
35% HP	35% hydrogen peroxide.
45% HP	45% hydrogen peroxide.
60% HP	60% hydrogen peroxide.
Aluminum, etc.	Aluminum, iron and copper.
Business Transfer	The April 1, 2016 business transfer of marketing and logistics operations for limestone-related products, including limestone aggregates, of Ube Industries to Ube Material.
Calcia Group	The group responsible for quality inspection of Calcia Products in the Quality Management Office, Chiba Plant.
Calcia Products	Products handled by the Calcia Division of Ube Material Industries, Ltd.
Chemical Products Team	Chemical Products Team in Quality Assurance Group 1, Ube Chemical Factory.
Chiba Petrochemical Factory	Chiba Petrochemical Factory of Ube Industries.
Chiba Plant	Chiba Plant of Ube Material.
Coal Testing Laboratory	Coal Testing Laboratory of Ube Industries, Ltd.
Committee Recommendations for Preventative Measures	Recommendations made by This Committee concerning preventative measures to be taken by the UBE Group.
Company's Recurrence Prevention Measures	"Recurrence Prevention Measures for Quality Improprieties" dated May 31, 2018 established by Ube Industries by conducting In-house Investigation, etc. in parallel with the investigation undertaken by The Committee.
Contact Desk for Information Provision	The contact office for the provision of information concerning Other Improprieties open to all UBE Group officers and employees, except for those of Group companies located overseas and those not connected to the Group Intranet system.
Each Company/Division	Each of the internal companies and divisions in the UBE Group.
Emergency Task Force	The in-house task force, established on December 27, 2017, for responses to improprieties headed by the representative director and president of Ube Industries, Ltd.
FA Calcium Carbonate	Calcium carbonate as food additive.
FA Magnesium Oxide	Magnesium oxide as food additive.
FA Ultra-high-purity Calcium Carbonate	Ultra-high-purity calcium carbonate as food additive.
Fake Values	Fake test result figures shown on the test report issued without actually conducting the quality test required in the product specification document for the Nylon manufactured and shipped to certain customers.

Fine Group	The group responsible for quality inspection of Fine Products in the Quality Management Office, Chiba Plant.
Fine Products	Products handled by the Fine Material Division of Ube Material Industries, Ltd.
First Questionnaire Subjects	Officers and employees of the sections responsible for quality assurance in Ube Industries and major manufacturing subsidiaries located in Japan within the UBE Group.
First Questionnaire Survey	The first questionnaire survey conducted for the designated questionnaire subjects as part of the investigation into Other Improprieties.
Food Cleaning Use	For the use of cleaning of food and food containers.
Former System	The quality control system managed in the host computer until 2004 by the Quality Assurance Group, Production Management Section, Plastics Department of the Ube Chemical Factory.
Four Fine Products	HAP, FA Calcium Carbonate, FA Magnesium Oxide and FA Ultra-high-purity Calcium Carbonate.
Four Kanto Ube Factories	Toyosu, Urayasu, Yokohama and Mizonokuchi factories of Kanto Ube Concrete Co., Ltd.
HAP	Hydroxyapatite.
HP Supplier	Manufacturer of hydrogen peroxide from which UBE-MC procures 60% HP.
High-purity Chemicals	High-purity nitric acid and ammonia solution.
High-purity Team	Fine and High-purity Chemicals Team, Fine Chemicals Quality Assurance Group, Specialty Products and Fine Chemicals Manufacturing Department, Ube Chemical Factory.
ICP Test	Test of heavy metals, arsenic and barium salt carried out by the Fine Group using inductively coupled plasma (ICP) analysis equipment.
In-house Investigation	The in-house investigation as directed by the representative director and president of Ube Industries to verify the existence or non-existence of quality assurance-related improprieties for the products manufactured by the UBE Group companies.
In-house Investigation Report	The “Results of Emergency Quality Investigations of UBE Group” report summarizing the results of the In-house Investigation, submitted by the Executive Officer in Charge of the Environment and Safety Department on January 24, 2018.
In-house Investigation, etc.	The In-house Investigation and In-house Polyethylene Investigation.
In-house Polyethylene Investigation	In-house investigation concerning Polyethylene Cases in order to verify non-existence of compromised product quality, provide information to customers, identify problem causes and prevent recurrence.
Industry Association	Cooperative industry association of ready-mixed concrete providers in each

	business area of Four Kanto Ube Factories.
JIS Act	Industrial Standardization Act (Act No. 185 of 1949) of Japan, including subsequent amendments made from time to time.
JSFA	Japanese Standards for Food Additives stipulated in the Food Sanitation Act of Japan.
Kanto Ube	Kanto Ube Concrete Co., Ltd.
Limestone Aggregate Supply Agreement	The agreement entered into between Ube Industries and Four Kanto Ube Factories for the supply of limestone aggregates from the Isa Mine by Ube Industries, Ltd. to the four factories.
Limestone Aggregate from Wrong Location	Limestone aggregate extracted in a location other than the Isa Mine agreed upon between the parties (i.e., products from the Torigatayama Mine).
MP, etc.	Melting point (temperature), specific gravity and added amount.
Mine Plant	Mine Plant of Ube Material Industries, Ltd.
Misleading Act	The act of using an indication on goods in a way that is likely to mislead as to the place of origin, quality, etc., or the act of transferring, etc. of the goods so indicated.
Nylon	Nylon resin manufactured in the Chemicals Manufacturing Department, Ube Chemical Factory.
Nylon Team	Nylon Team in the Chemicals Product Assurance Group, Chemicals Manufacturing Department, Ube Chemical Factory.
Official Standards	Standards established based on legislation or certification by official institutions.
Other Companies' Mining Product	Other companies' limestone aggregates marketed in addition to products from the Isa Mine.
Other Improprieties	Improprieties other than the polyethylene cases revealed in the UBE Group.
Polyethylene Case	The improprieties involving some of the products sold by Ube-Maruzen Polyethylene, in which the product manufacturer, Chiba Petrochemical Factory, failed to carry out some of the test items agreed upon with the customer.
Polyimide	Polyimide film manufactured in the Ube Chemical Factory and Sakai Factory.
QAQC Meeting	Quality assurance meeting regularly held since September 2011 between the Chemical Products Team and UBR Analysis Center Chemicals Products Analysis Team.
Quasi-Drug Standards	The Japanese Standards of Quasi-Drug Ingredients.
Questionnaire Surveys	First and second questionnaire surveys.
Raw Data	The existing test records that are the closest to the primary test results.
Sakai Factory of Ube Industries	Sakai Factory of Ube Industries, Ltd.

Second Questionnaire Subjects	Officers and employees of the sections responsible for quality assurance in the UBE Group companies covered by the Second Questionnaire Survey.
Second Questionnaire Survey	The second questionnaire survey conducted for all UBE Group companies, except for 1) the companies subjected to the First Questionnaire Survey; 2) those in which Ube Industries' investment ratio is 50% or less; 3) those not manufacturing products; and 4) those located overseas.
Soil Group	The group responsible for soil tests in the Quality Management Office, Chiba Plant.
Soil Test	Tests to investigate the strength of ground improved by means of ameliorant.
Specialty Products Development Department	Polyimide and Specialty Products Development Department, Ube Chemical Factory.
Specific Surface Area	Specific surface area of silica particle.
Stock Point	Company commissioned as UBE-MC's product stock point to store, repackage into smaller sizes, and ship 35% HP.
TOC	One of the test items to measure the Total Organic Carbon contained in water.
Team 1	Team 1, Quality Assurance Group 2 of the Ube Chemical Factory.
The Committee	The investigation committee comprising attorneys without any conflict of interest and an outside director, as established in the Board of Directors meeting on February 21, 2018.
The Investigation	The investigation in which This Committee was commissioned to 1) clarify what actually occurred in the Polyethylene Case; 2) confirm the existence or non-existence of improprieties similar to the Polyethylene Case and, in positive cases, clarify what occurred; 3) verify the appropriateness of the in-house investigation; 4) identify the background situation of the improprieties and analyze possible causes; and 5) evaluate the preventative measures established by Ube Industries and conduct investigation based on This Committee's recommendations for the prevention of recurrence.
The UBE Group	Ube Industries, Ltd. and its subsidiaries and affiliated companies.
Tohoku Tekkosya	Tohoku Tekkosya Co., Ltd.
UBE-MC	UBE-MC Hydrogen Peroxide Limited
UBE-Maruzen Polyethylene	UBE-Maruzen Polyethylene Co., Ltd.
UBR	Ube Logistics Service, Ltd.
Ube Chemical Factory	Ube Chemical Factory of Ube Industries, Ltd.
UBE EXSYMO	UBE EXSYMO CO., LTD.
Ube Industries	Ube Industries, Ltd.
Ube Material	Ube Material Industries, Ltd.
Ube Plant	Ube Plant of Ube Material Industries, Ltd.
Ube Sand	Ube Sand Co., Ltd.

Chapter 1: Overview of Investigation

I. Process of Establishment of Investigation Committee

Ube Industries, Ltd. (hereinafter referred to as "Ube Industries") conducted an in-house investigation (hereinafter, "In-house Investigation") from November 27, 2017 to verify the existence or non-existence of quality assurance-related improprieties for products manufactured by Ube Industries and its subsidiaries and affiliated companies (hereinafter referred to collectively as "the UBE Group"). In the process of the In-house Investigation, a number of improprieties were discovered, including the fact that some of the test items agreed upon with the customer had not been implemented for certain products manufactured by Chiba Petrochemical Factory of Ube Industries (hereinafter, "Chiba Petrochemical Factory") and sold by UBE-Maruzen Polyethylene Co., Ltd. (hereinafter, "UBE-Maruzen Polyethylene," and these improprieties are hereinafter referred to as "Polyethylene Case.").

In light of this, Ube Industries concluded further in-house investigation to be necessary, particularly because it was assumed that the Polyethylene Case was ongoing, intentional and wide-ranging in effect. On December 27, 2017, the in-house task force headed by the representative director and president of Ube Industries (hereinafter, "Emergency Task Force") was set up. As a result of this internal investigation (hereinafter referred to as the "In-house Polyethylene Investigation" and referred to together with the In-house Investigation as the "In-house Investigation, etc."), it was reported that the improprieties began in the early 1990s and that a number of items to be checked had not been carried out (the details are as set out in Chapter 5).

In view of the findings of the In-house Investigation, etc., Ube Industries judged it to be appropriate to entrust the clarification of the facts and evaluation of the recurrence prevention measures established by Ube Industries to a third party. On February 21, the Board of Directors resolved to establish an investigation committee comprising attorneys without any conflict of interest and an external director (hereinafter, "The Committee") and commissioned The Committee to conduct an investigation into the matters further described in II., below (hereinafter, "The Investigation").

Ube Industries published a summary of the Polyethylene Case in a press release, "Statement regarding Improprieties in Quality Checks for Low-Density Polyethylene Manufactured at Chiba Petrochemical Factory," published on February 23, 2018 and announced the establishment of The Committee in the same press release.

II. Objectives of The Investigation

The Committee agreed with Ube Industries that The Investigation will focus on the following matters and established these matters as the objectives of The Investigation.[1] The scope of the companies subject to The Investigation was determined in principle as Ube Industries and major manufacturing UBE Group subsidiaries

1 The objectives of the investigation were established based on principles such as (i) "Identifying the root causes of the scandal," and (iii) "Formulating and swiftly implementing effective measures to prevent recurrence" in Publication of Principles for Responding to Corporate Scandals (Japan Exchange Regulation (JPX-R) February 24, 2016). The establishment of The Committee was based on (ii) "Ensuring that a third-party committee (where necessary) has the necessary independence, neutrality, and expertise."

located in Japan.[2] It is not the objective of The Committee to pursue any legal responsibility of persons involved in the improprieties.

i. Clarification of the facts in the Polyethylene Case
ii. Clarification of the existence or non-existence of improprieties similar to the Polyethylene Case and clarification of the facts (details on the categories of improprieties and the criteria for determining improprieties are as set out in Chapter 3 below)
iii. The appropriacy of the In-house Investigation
iv. The background of the improprieties and identification of problem causes
v. Evaluation of the preventative measures established by Ube Industries and recommendations by The Committee to prevent recurrence

III. Committee Structure for Investigation

The Committee is made up of the following members:

Committee members: Shuji Oda, Lawyer from Kohwa Sohgoh Law Offices
Junichi Ikeda, Lawyer from Nagashima Ohno & Tsunematsu
Takashi Shoda, Outside Director of Ube Industries, Ltd.

Secretaries: Group CCO
General Manager of the General Affairs & Human Resources Office
General Manager of the Procurement & Logistics Division
Staff responsible for the Group CSR
General Manager of the Legal Department

The Committee Chairman was to be determined by mutual election by members, and as a result, Shuji Oda was elected as Chair. None of the above committee members, except for the outside director, has had any conflict of interest with the UBE Group.

In order to carry out The Investigation, the following Assistant Investigators were nominated under the direct jurisdiction of The Committee. None of them has had any conflict of interest with the UBE Group.

Assistant Investigators
From Kohwa Sohgoh Law Offices
Lawyer Masaki Kobayashi, Lawyer Makoto Shirai, Lawyer Taro Kitani
Lawyer Takehito Nakazawa, Lawyer Ryosuke Watanabe, Lawyer Ryutaro Inoue
Lawyer Hirotaka Sakashita, Lawyer Sho Hashimoto

2 Afterwards, The Committee made recommendations and notices for Ube Industries to conduct its own appropriate in-house investigation of its affiliated manufacturing companies and overseas manufacturing subsidiaries that are not subject to The Investigation.

From Nagashima Ohno & Tsunematsu
Lawyer Masao Ito, Lawyer Takashi Kiuchi, Lawyer Ayumi Fukuhara
Lawyer Tetsuya Hara, Lawyer Sohei Asao, Lawyer Yoshiro Tanimoto
Lawyer Hiroki Takano, Lawyer Haruki Mizuno, Lawyer Takuya Kogashiwa
Lawyer Junya Shimada, Lawyer Ryohei Kozumi, Lawyer Yukihiro Yasuda

From Hokuto Law Office
Lawyer Hirofumi Kurahashi, Lawyer Keisuke Chiba, Lawyer Kohei Takahashi
Lawyer Taiki Yokose, Lawyer Yuya Suzuki, Lawyer Shigeki Matayoshi

Certified Public Accountants
CPA Kenji Kawae, CPA Kohei Yoshida, and 11 other CPAs

IV. Measures to Ensure Independence of The Committee and Effectiveness of Investigation

The investigations by The Committee will be conducted fairly in line with the Guidelines for Third Party Committees Established in the Event of Corporate Misconduct issued by the Japan Federation of Bar Associations, although not strictly conforming to all the stipulations therein. The following matters were agreed upon with Ube Industries with the intention of ensuring The Committee's objectivity and independence and achieving an effective investigation.

(i) The UBE Group will be united in cooperating fully with The Investigation by The Committee.
・Ube Industries will guarantee access to all the materials and information possessed by the UBE Group and all of the UBE Group's directors and employees
・Ube Industries will instruct the directors and employees of the UBE Group to prioritize cooperation with the work of The Investigation by The Committee
・Ube Industries will establish a secretariat with the appropriate number of directors and employees to assist the investigations of The Committee in the event of a request to do so from The Committee (the secretariat shall be under the direct jurisdiction of The Committee, and a strict information barrier shall be established between the staff of the secretariat and Ube Industries)

(ii) The Committee will have the exclusive right to draft the investigation report, and this includes having no obligation to disclose all or part of the investigation report to Ube Industries prior to its submission.

(iii) In the event that it is unable to obtain adequate cooperation from the UBE Group with The Committee's investigations or in the event that The Investigation is obstructed, it may note such circumstances in the investigation report.

(iv) The Committee will, in principle, have the right to dispose of the materials, etc. that The Committee collects during its investigations.

(v) With regard to the progress and results of the In-house Investigation, etc., Ube Industries will share the status of the investigation with The Committee in an appropriate and timely manner.

V. Period and Method of Investigation

The Investigation was conducted from February 21, 2018, when The Committee was established, until June 4, 2018, and this report was submitted on the report preparation date by The Committee to Ube Industries.

Although The Investigation was initially planned to end on March 31, 2018, the date was changed to April 30, 2018 in light of improprieties other than the Polyethylene Case (hereinafter, "Other Improprieties) revealed in the UBE Group. As a further number of Other Improprieties were subsequently revealed as set out in VI – 2 (2) below, The Committee discussed the extension of the period of investigation, including the possibility of submitting an interim report, with Ube Industries, but it received a strong request from Ube Industries for a report on the findings of the investigation as soon as possible. Therefore, taking into consideration such points as whether it was possible to secure the minimum time period of investigation required for The Committee to finish the investigation to attain all the objectives in II., above, it was decided to entrust to Ube Industries certain investigations which were deemed reasonable to do so. Based on the final report submission date of June 5, 2018 referred to in VI. 2. (2), below, the final day of The Investigation was fixed for June 4, 2018, the previous day.

In summary, The Committee conducted the investigations specified in 1. through 7. below.

1. Careful Examination of Relevant Materials

The Committee obtained and carefully examined all kinds of company regulations, minutes of proceedings, decision-making documents, contracts, test records, inspection reports, procedure manuals, and specification sheets from the UBE Group companies subject to The Investigation through requests for disclosure, etc. to the UBE Group companies. The Committee also conducted analysis and verification of materials related to the In-house Investigation and a variety of other materials (including statutory disclosure documents such as securities reports and quarterly reports, timely disclosure documents based on stock exchange regulations, the websites of UBE Group companies, IR materials disclosed on those websites, published information by private information providers, and other information that is available to the public).

In addition, The Committee received explanations on the results of verifications conducted by the experts in each field appointed by Ube Industries as well as obtaining and carefully examining the following materials as materials relevant to The Investigation.

(i) "On Quality Checks of Low Density Polyethylene, UBE-Maruzen Polyethylene" from Professor Masataka Sugimoto, Department of Organic Materials Science, Graduate School of Organic Materials Science, Yamagata University (April 10, 2018)

(ii) "Report on Strategies to Prevent Recurrence focused on Quality Non-compliance at UBE-Maruzen Polyethylene" from Masatoshi Matsuda, JMC Consultants Inc. (April 11, 2018)

2. Interviews

The Committee conducted interviews with a total of 330 persons related to the UBE Group.

3. On-site Inspections

The Committee conducted on-site inspections at factories and analysis laboratories related to the Polyethylene Case and Other Improprieties, as listed below.

Date	Venue
March 4, 2018	Chiba Petrochemical Factory of Ube Industries, Ltd.
March 22, 2018	Ube Chemical Factory of Ube Industries, Ltd.
April 8, 2018	Fukushima Factory of UBE EXSYMO CO., LTD.
April 21, 2018	Tohoku Tekkosya Co., Ltd.
April 21, 2018	Gifu Factory of UBE EXSYMO CO., LTD.
April 24, 2018	Ube Chemical Factory of Ube Industries, Ltd.
April 27, 2018	Chiba Plant of Ube Material Industries, Ltd.
May 5, 2018	Mine Plant of Ube Material Industries, Ltd.

4. Digital Forensic Investigation

The Committee selected KPMG FAS to be the digital forensic investigator. Through KPMG FAS, electronic data was preserved, including e-mail data, stored on work PCs provided by companies that had been used by 51 persons who The Committee deemed it necessary to investigate. Also, the electronic data on e-mail servers were preserved, including e-mail data, that The Committee deemed necessary. With respect to the preserved electronic data, it then conducted an analysis and review of electronic data extracted after the recovery of deleted files.

5. First Questionnaire Survey

(1) Implementation Policy

The Committee conducted the first questionnaire survey with directors and employees of the sections responsible for quality assurance (hereinafter, "First Questionnaire Subjects")[3] in Ube Industries and major manufacturing UBE Group subsidiaries located in Japan (hereinafter, "First Questionnaire Survey").

(2) Method of First Questionnaire Survey and Response Results

On March 10, 2018, "Questionnaire for Directors and employees (*response required)" was distributed to 763 First Questionnaire Subjects minus three directors and employees[4] by e-mail or personal delivery, with a request for it to be returned directly to The Committee[5] by e-mail or post by March 23, 2018.

As a result, responses from 763 persons were obtained for the First Questionnaire Survey (100% response rate).

3 The survey covered all the directors and employees as of March 16, 2018.

4 The First Questionnaire Survey was not conducted for two persons on maternity leave and one person on sick leave.

5 The e-mail address of an assistant investigator from Kohwa Sohgoh Law Offices and the office's postal address were used for receiving e-mail and postal mail. The same applies for the Second Questionnaire Survey in 6., below, and the Contact Desk for Information in 7., below.

The Committee directly received the responses and opened all of them.

(3) Questions and Responses of First Questionnaire Survey

The content of the items and the response results for each item in the First Questionnaire Survey are as follows.

Questions	Response results
1. Improprieties at Chiba Petrochemical Factory Prior to knowing about the February 23, 2018 press release Statement regarding Improprieties in Quality Checks for Low-Density Polyethylene Manufactured at Chiba Petrochemical Factory, have you written a test record for a low-density polyethylene product manufactured at Chiba Petrochemical Factory despite not having conducted some of the test items agreed upon with the customer; have you witnessed or heard of a director or employee engaging in such an act; or have you been ordered to engage in such an act by a director or an employee?	Responses affirming one of the experiences on the left: 12
2. Improprieties at the UBE Group overall Other than 1., above, have you written a test record, written or entered a value that differs from the measurement value, or altered test results for a product that the Group handles (including products other than low-density polyethylene manufactured at Chiba Petrochemical Factory and products other than chemicals) despite not having conducted some of the test items agreed upon with the customer; have you witnessed or heard of a director or employee engaging in such an act; or have you been ordered to engage in such an act by a director or an employee at an UBE Group company?	Responses affirming one of the experiences on the left: 53
(2) In affirmative cases to the previous questions, please describe the time, agreement details, and the specific form that the act took.	Specific descriptions relating to the item on the left:[6] 56

(4) Action on Responses to First Questionnaire Survey

The response results from the First Questionnaire Survey were roughly classified into (i) through (iii) below. The Committee conducted investigations that included interviews (including those by telephone) of the First Questionnaire Subjects when it was deemed necessary based on their responses.

(i) Responses relating to the Polyethylene Case

(ii) Responses suggesting the existence of Other Improprieties

(iii) Responses relating to other than (i) or (ii) above.

6. Second Questionnaire Survey

(1) Implementation Policy

The Committee conducted a second questionnaire survey covering all UBE Group companies except for those in (i)

6 In the First Questionnaire Survey, three persons gave specific responses to item 2. (2) but did not affirm the experience in item 2. (1).

through (iv) below (hereinafter referred to as the "Second Questionnaire Survey" and referred to, together with the First Questionnaire Survey, as the "Questionnaire Surveys") because more information was provided than initially anticipated in the First Questionnaire Survey and also because the said survey did not cover the subsidiaries of subsidiaries of Ube Industries or companies manufacturing some types of products.
Second Questionnaire Survey not applicable to:
(i) Companies that undertook the First Questionnaire Survey
(ii) Companies in which the UBE Group's equity interest is 50% or less
(iii) Non-manufacturing companies
(iv) Overseas local subsidiaries

The Committee excluded (iv) overseas local subsidiaries from the coverage of the said survey based on a presentation from Ube Industries that inclusion of these subsidiaries was difficult and unnecessary as they follow the laws, regulations, and business practices, etc. of a particular foreign country. However, The Committee made a recommendation that these overseas local subsidiaries should also be surveyed in a supplementary investigation to be made by Ube Industries separate from The Investigation, as set out in Chapter 5, IV. 1., below.

On the other hand, The Committee received a request from Ube Industries to exclude the UBE Group ready-mixed concrete manufacturing companies and transport companies from the scope of the Second Questionnaire Survey on the grounds that said companies are under strict quality control by their customers. However, The Committee decided to include these companies in the said survey on the grounds that improprieties have actually been revealed even at such strict control-subjected companies.

(2) Method of Second Questionnaire Survey and Response Results

On April 19, 2018, "Questionnaire for Directors and Employees (*response required)" was distributed to 155 directors and employees of the sections responsible for quality assurance (hereinafter referred to as "Second Questionnaire Subjects")[7] in the UBE Group companies applicable to the Second Questionnaire Survey as stated in (1) above. The questionnaire was distributed to the Second Questionnaire Subjects, minus two directors and employees,[8] by e-mail or personal delivery with a request for it to be returned directly to The Committee by e-mail or post by April 25, 2018 (except for the ready-mixed concrete manufacturing company and transport company mentioned in (1) above, for whom the deadline was May 7, 2018. It was due to the delay in the questionnaire distribution caused by Ube Industries' request for their exclusion from the Second Questionnaire Survey).

As a result, responses from 155 persons were obtained for the Second Questionnaire Survey (100% response rate). The Committee directly received the responses and opened all of them.

(3) Questions and Responses of Second Questionnaire Survey

7 All the directors and employees on the payroll as of April 18, 2018.
8 The Second Questionnaire Survey was not conducted for two persons who were on sick leave.

The content of the items and the response results for each item in the Second Questionnaire Survey are as follows.[9]

Questions	Responses
(1) Have you written a test record, written or entered a value that differs from the measurement value, or altered test results for a product that the Group handles (including products other than low-density polyethylene manufactured at Chiba Petrochemical Factory and products other than chemicals) despite not having conducted some of the test items agreed upon with the customer; have you witnessed or heard of a director or employee engaging in such an act; or have you been ordered to engage in such an act by a director or an employee, at an UBE Group company?	Responses affirming one of the experiences on the left: 4
(2) In affirmative cases to the previous question, please describe the time, agreement details, and the specific form that the act took.	Specific descriptions relating to the item on the left: 4

(4) Action on Responses to Second Questionnaire Survey

All of the four responses affirming one of the experiences in Question (1) referred to in (3) above were related to improprieties concerning Tohoku Tekkosya Co., Ltd. (hereinafter referred to as "Tohoku Tekkosya"), where The Committee had already initiated investigations at the time when the questionnaire was distributed. There were no cases necessitating a new investigation based on the responses to the Second Questionnaire Survey.

7. Establishment of Contact Desk for Information

(1) Implementation Policy

The Committee established a contact office for the provision of information concerning Other Improprieties (hereinafter, "Contact Desk for Information") open to all UBE Group directors and employees, except for those of Group companies located overseas and those not connected to the Group intranet system, as an investigation method into Other Improprieties. Information on the opening of the contact desk was posted on the UBE Group company intranet.

(2) Operation of Contact Desk for Information and Receipt of Information

The Contact Desk for Information was announced on the UBE Group company intranet on March 9, 2018, without the setting of a closing date, with a request for information to be sent directly to The Committee by e-mail or post. It was also decided that The Committee would open any information that The Committee directly received.

The establishment of the Contact Desk for Information was posted again and announced on the UBE Group company intranet on April 10, 2018, but no information was provided during the period of investigation undertaken

9 The survey now extended to Other Improprieties based on the First Questionnaire Survey results, so it was not necessary any more to specify the Polyethylene Case. Therefore, item 1. Improprieties at Chiba Petrochemical Factory, as used in the first questionnaire, was removed for the second questionnaire.

by The Committee.

(3) Review and Action on the Results from the Establishment of the Contact Desk for Information

As stated in (2) above, no information was provided to the Contact Desk for Information, and The Committee concluded that any specific additional investigation was unnecessary.

VI. Activity of The Committee (Recommendations to Ube Industries and Other Matters of Special Note)

1. Sessions of The Committee

As stated in V. above, the period of investigation undertaken by The Committee was from February 21, 2018, when The Committee was established, until June 4, 2018.

The Committee was in session a total of 21 times on the dates below. All of the committee members attended on all of the dates.

February 21, 2018	February 24, 2018	February 26, 2018	March 5, 2018
March 13, 2018	March 16, 2018	March 20, 2018	March 26, 2018
March 28, 2018	March 30, 2018	April 6, 2018	April 11, 2018
April 18, 2018	April 23, 2018	May 7, 2018	May 14, 2018
May 22, 2018	May 23, 2018	May 24, 2018	May 29, 2018
June 1, 2018			

2. Recommendations to Ube Industries and Other Matters of Special Note

(1) March 29, 2018

The Committee issued a document entitled “Progress of Investigation into Improprieties in Quality Control for Polyethylene Products” dated March 29, 2018, in which The Committee reported the progress of investigation to Ube Industries as well as reporting that responses suggesting the existence of Other Improprieties relating to a number of products were received through the results of the First Questionnaire Survey. The Committee considered that some cases in the responses were highly likely to fall into the category of improprieties. Such responses were disclosed to Ube Industries to the minimum extent necessary for in-house investigations after taking adequate measures to de-identify the respondents, which included making the responses anonymous.

(2) April 25, 2018

As a result of the First Questionnaire Survey, interviews, and other investigations, the existence of Other Improprieties relating to a number of products were revealed. The Committee issued a document entitled “Report on the Deadline for Submission of the Investigation Report” dated April 25, 2018, in which The Committee summarized the problems, recovery efforts of improprieties being taken and the progress of the investigation undertaken by The Committee. The Committee also explained that a further time period of investigation was necessary to undertake an investigation adequate to fulfill accountability to stakeholders, including shareholders and customers, and reported that The Committee planned June 5, 2018 as the rescheduled submission date for its

final report despite taking into consideration the request from Ube Industries for a report on the investigation findings as soon as possible.

(3) April 26, 2018

The Committee issued a document entitled "Status Report for the Results of Verification by the In-house Investigation and Recommendation for the Implementation of a Supplementary Investigation" dated April 26, 2018, in which The Committee pointed to problems found in the In-house Investigation undertaken by Ube Industries and recommended that Ube Industries implement a supplementary investigation. Due to the problems with the In-house Investigation undertaken by Ube Industries, as detailed in Chapter 5, III, 2 (1), The Committee was compelled to point out issues concerning the comprehensiveness of the scope of investigation, the rationality and adequacy of the methods of investigation, and the appropriacy of the evaluation of the investigation findings. The Committee recommended the implementation of a supplementary investigation as stated above because, if The Committee were to provide Ube Industries with an interim status report before the submission of the final report and Ube Industries were to undertake a supplementary investigation based on such report, it could supplement the inadequacies of the In-house Investigation as well as leading to the correction of the improprieties as soon as possible.

(4) May 9, 2018

The Committee was requested by Ube Industries to adhere strictly to the scheduled date for the submission of the final report stated in (2) above on the grounds that a certain amount of time for review is required for press releases concerning improprieties and for action on Other Improprieties.

As stated in Chapter 5, IV. below, the supplementary investigation recommended by The Committee was not yet completed, and e-mail and other information requiring new study and investigation had been revealed in the digital forensic examination. The Committee submitted to Ube Industries a document entitled "Response to 'Request for Deadline for Receipt of Investigation Report' and Recommendation for Implementation of Supplementary Investigation (No. 2)" dated May 9, 2018. In this document it was proposed to limit the scope of investigation by The Committee only to the cases revealed as of the time of submission of the document entitled "Report on the Deadline for Submission of the Investigation Report" referred to in (2) above, and to leave to Ube Industries an investigation of new cases revealed since that time and confirmation of the appropriacy and rationality of the supplementary investigation referred to in (3) above. It was because of the necessity to meet the deadline for submission of the final report, which was strongly requested by Ube Industries. Ube Industries agreed with The Committee to take the actions in line with the said proposal.

VII. Limitations of The Investigation

The Committee undertook the investigations it deemed necessary in order to meet the objectives for The Investigation stated in 2. above. However, The Committee confirms that there were limitations on The Investigation. The limitations stem from: i) the fact that the investigations were those commissioned by Ube

Industries; ii) the fact that it was strictly conditional on the voluntary cooperation of the parties concerned rather than being based on compulsory investigative authority; iii) the fact that the investigations were undertaken with time constraints because there was a deadline for the investigation undertaken by The Committee agreed with Ube Industries as stated in 5. above; iv) the fact that The Investigation relied on relevant materials provided by the UBE Group and statements obtained from interviews with its directors and employees and were conditional, in principle, upon the authenticity of these related materials and statements, even though clarification efforts were made whenever apparently questionable points or contradictions were found in these related materials and statements; and v) the fact that The Investigation assumed that the UBE Group had disclosed all of the important information materials other than the related materials.

The determination of the facts made by The Committee is based on the findings of The Investigation undertaken under such limitations. The determination of the facts in The Investigation are subject to change in the event that related materials other than those obtained by The Committee exist or that it discovers factual inaccuracies in statements obtained in interviews or other means.

Chapter 2: Organization, Business Areas, etc. of Ube Industries

I. Overview of Ube Industries[10]

Ube Industries, Ltd. is an incorporated joint-stock company of Japan, established through the 1942 amalgamation of four firms: Okinomiya Coal Mine, established as a silent partnership in 1897; Ube Shinkawa Iron Works, established as a silent partnership in 1914; Ube Cement Production, Ltd., established in 1923; and Ube Nitrogen Industry, Ltd., established in 1933. Ube Industries listed its shares on the Tokyo Stock Exchange and the Osaka Stock Exchange (now the Osaka Exchange) in 1949 and is currently listed on the Tokyo and Fukuoka Stock Exchanges.

Ube Industries has a number of subsidiaries and affiliated companies, and the UBE Group is composed of three in-house companies consisting of Chemicals, Cement & Construction Materials, and Machinery, which have autonomy depending on the form of individual business entities, as well as two business divisions consisting of Pharmaceuticals and Energy & Environment. The number of employees amounts to 10,928, including those working at consolidated subsidiaries, with 3,612 on a non-consolidated basis as of March 31, 2017.

Ube Industries is run as an organization having the Corporate Research & Development Division, Head Office function departments, and branches, in addition to the three in-house companies and two business divisions mentioned above. It implements consolidated management with each Group company under its supervision (See Figure 1 for the organization of Ube Industries).

Factories in Japan are located in Ube (Yamaguchi Prefecture), Ichihara (Chiba Prefecture), Sakai (Osaka Prefecture), Misaki (Yamaguchi Prefecture), and Kanda (Fukuoka Prefecture). Outside of Japan, Ube Industries has established production locations in Spain and Thailand for nylon resin and fine chemicals among other products. The Company is active in global markets.

The main Group locations in Japan are as shown in Figure 2.

10 For the descriptions of this section, please refer to page 3 of the Ube Industries Securities Report for the 111th Fiscal Year and website: http://www.ube-ind.co.jp/ube/jp/corporate/about/history.html

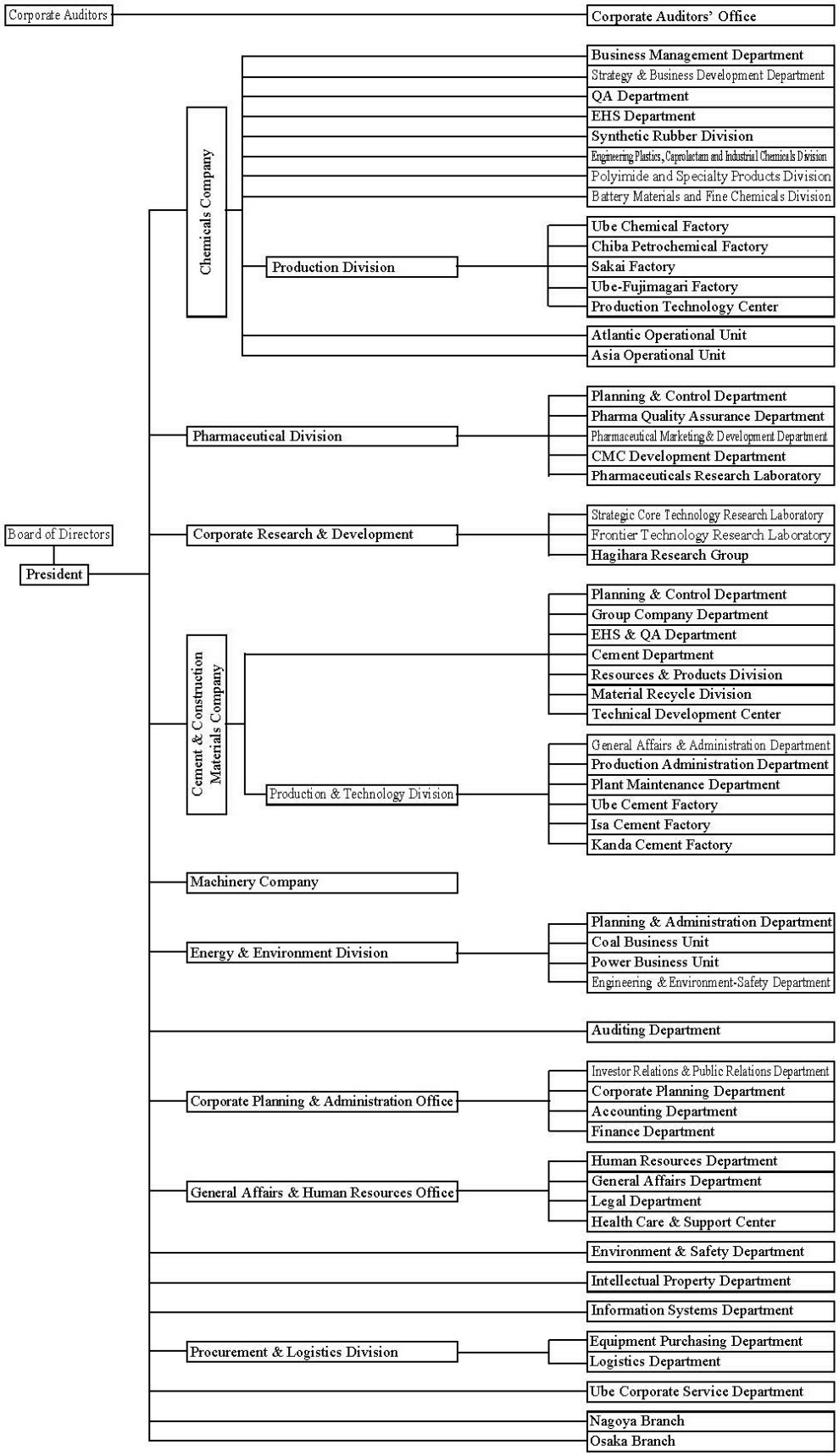


Figure 1: Organization of Ube Industries



Figure 2: Locations of Main Business Sites in Japan

II. UBE Group Business Areas, etc.

1. Business Areas of Ube Industries

An overview of the business areas engaged in by each in-house company, business division, the Corporate Research & Development Division, the Head Office function departments, and branches of Ube Industries is as set out below. The relationship between Ube Industries and UBE Group companies is as shown in Figure 3.

(1) Chemicals Company

The Chemicals Company is involved in products that include nylon resin, synthetic rubber, separators, and high function coatings, as well as fine chemicals (which are the core business), lactam, industrial chemicals, high-purity chemicals (defined in Chapter IV. I. 5. (1)), silicon nitrides, separation membranes, polyethylene, ABS resins, phenol resins, and polymers. These products have wide-ranging applications in everything from automobiles and information-related uses to social infrastructure and other sectors.

The net sales amount and number of employees of the Chemicals Company account for approximately 40% of the UBE Group. As of March 31, 2017, there were 4,796 employees working in these areas, including consolidated subsidiaries, with 2,079 employees on a non-consolidated basis.

The Chemicals Company has four production sites in Japan at Ube Chemical Factory (hereinafter “Ube Chemical Factory”), Chiba Petrochemical Factory, Sakai Factory (hereinafter “Sakai Factory”), and Ube-Fujimagari Factory of Ube Industries. The affiliated companies of the Chemicals Company include UBE EXSYMO CO., LTD.

(hereinafter “UBE EXSYMO”), Meiwa Plastic Industries, Ltd., Ube Electronics, Ltd. and Ube Film, Ltd. (these four are Ube Industries’ wholly owned subsidiaries), as well as consolidated subsidiaries such as UBE-MC Hydrogen Peroxide Limited (hereinafter “UBE-MC”), UBE MAXELL CO., LTD., and Ube Logistics Service, Ltd. (hereinafter “UBR”), and equity method-applicable affiliated companies such as Ube-Maruzen Polyethylene and Ems-Ube, Ltd.

(2) Pharmaceutical Division

The Pharmaceutical Division is engaged in the development and commercial production of new drug candidate compounds discovered by the UBE Group’s Pharmaceuticals Research Laboratory as well as contract manufacturing, which includes process development for compounds formulated by non-UBE Group pharmaceutical companies. Another business domain of the Pharmaceutical Division is the manufacture and sale of active pharmaceutical ingredients (APIs) and intermediates for generic drugs.
The number of employees of this division as of March 31, 2017 was 18.

(3) Cement & Construction Materials Company

With the limestone resources owned by the Isa Cement Factory, the Cement & Construction Materials Company is engaged mainly in the cement, construction material, and limestone resource businesses. This Company ranks second to the Chemicals Company in the UBE Group in terms of net sales, asset amount, and number of employees. As of March 31, 2017, the Cement & Construction Materials Company had 779 employees, and the total with its related consolidated subsidiaries was 2,931 employees.

(4) Machinery Company

The Machinery Company manages 14 Group companies, of which nine are consolidated subsidiaries and five are non-consolidated subsidiaries as of February 1, 2018, with the core company being Ube Machinery Corporation, Ltd. The main businesses include manufacture, sale, and after-sales service of molding machines, industrial machinery, steelmaking machinery, marine machinery, and control boards. As of March 31, 2017, there were 1,804 employees working for this Company, including its related consolidated subsidiaries, and the non-consolidated Company had no employees.

(5) Energy & Environment Division

The Energy & Environment Division has two business units; namely, the Coal Business Unit and the Power Business Unit, in addition to the Engineering & Environment-Safety Department responsible for the engineering and environmental-safety matters commonly applicable across the Division. The Coal Business Unit is engaged in the import, storage, and sale of coal, including the supply of coal to UBE Group companies, while the Power Business Unit is engaged in the utility supply business in the Ube Industries’ Ube Area, including electricity and steam; the power wholesale supply business; and the electricity sales business through the renewable energy feed-in tariff system. The Engineering & Environment-Safety Department provides technical support directly related to the business of each Business Unit, as well as working to promote the UBE Group’s energy and environment

strategies.

As of March 21, 2017, there were 254 employees working in the Energy & Environment Division, including its related consolidated subsidiaries, and 197 employees on a non-consolidated basis.

(6) Corporate Research & Development

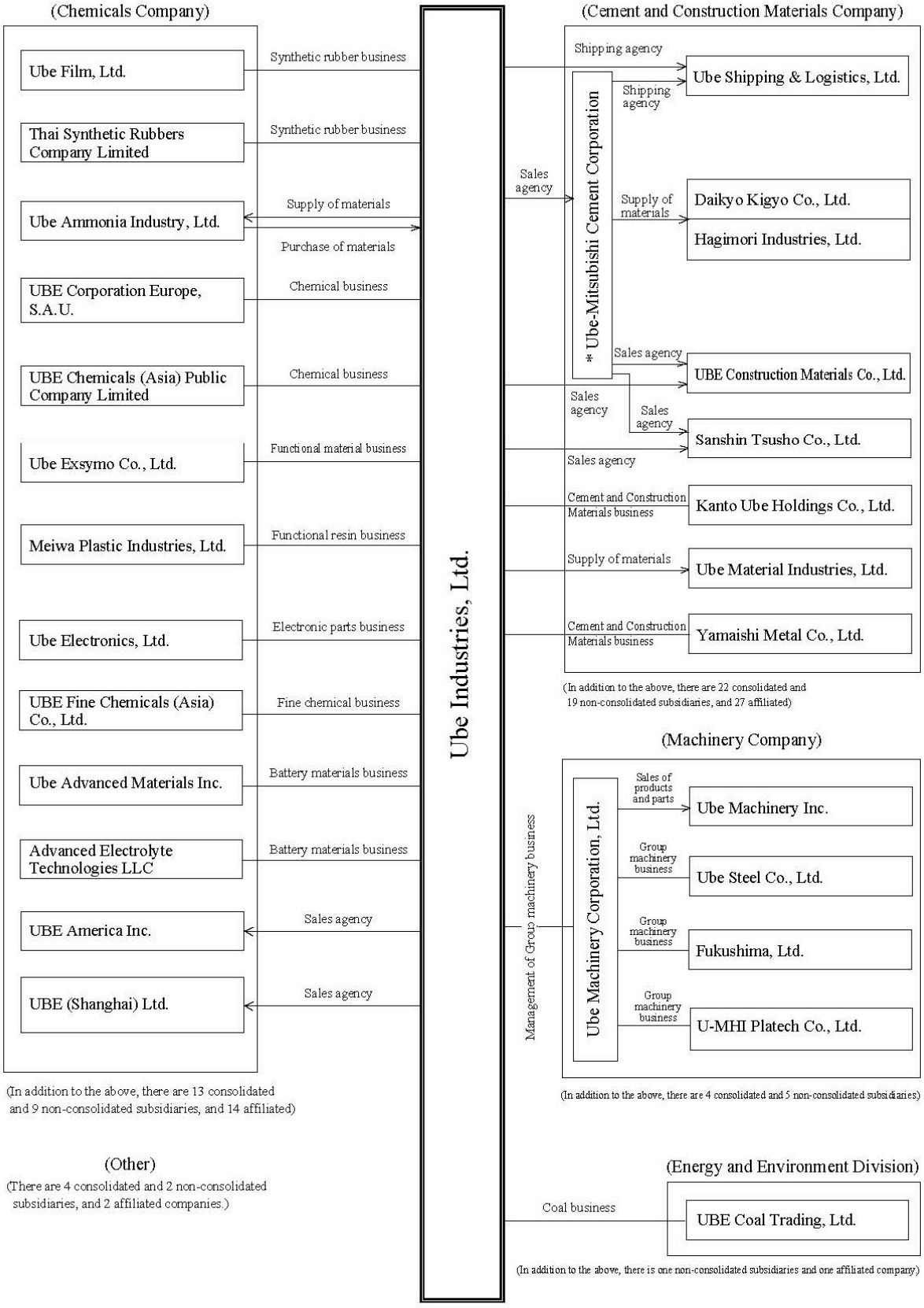
Corporate Research & Development at Ube Industries comprises the Strategic Core Technology Research Laboratory, the Frontier Research Laboratory, and the Hagihara Research Group. The Strategic Core Technology Research Laboratory is engaged in R&D in the catalyst technology and basic production technology areas as fundamental areas commonly applicable across the UBE Group, while the Frontier Research Laboratory focuses on new materials for future business expansion as priority research areas. In addition, the mission of the Hagihara Research Group is to investigate and explore products with future potential for Ube Industries, and propose future research projects and conduct actual verification for the creation of new businesses.

(7) Head Office Divisions

The Head Office divisions include the Corporate Auditor's Office, the Corporate Planning & Administration Office, the General Affairs & Human Resources Office, the Environment & Safety Department, the Intellectual Property Department, the Information Systems Department, the Procurement & Logistics Division, and the Ube Corporate Service Department, among others.

(8) Branches

Ube Industries has the Nagoya Branch and the Osaka Branch, which are engaged in administration, personnel and labor operations, accounting and other work.



Note: * denotes an equity method-applied company, and all the others are consolidated subsidiaries.

Figure 3: Overall UBE Group Business Structure

2. Corporate Governance of Ube Industries

An overview of the management structure and the internal control system at Ube Industries is shown in Figure 4.

(1) Corporate governance system

Ube Industries is a Company with Board of Company Auditors (as stipulated in the Companies Act of Japan), having eight directors, four corporate auditors, and 26 executive officers[11] (two of whom serve concurrently as directors). The directors, corporate auditors, and executive officers are shown in Figure 5 and Figure 6. As a rule, the Board of Directors is chaired by a director who does not serve concurrently as an executive officer, and it makes decisions about important matters on company management in accordance with laws and regulations, the Articles of Incorporation, and the Regulations of the Board of Directors, as well as overseeing the directors and executive officers to ensure that they execute their duties in an appropriate and efficient manner. Executive officers are entrusted by the President and Representative Director to execute the Company's business, guided by the management policies determined by the Board. On top of that, Ube Industries has outside directors from June 2005, and operates a Nominating Committee and Evaluation and Compensation Committee that report to the Board of Directors. It is to secure independent, third-party perspectives for decision making and the monitoring of management, and also to ensure efficiency, transparency, and objectivity of management. As of April 1, 2018, the Nominating Committee and Evaluation and Compensation Committee are made up of six directors each, with each committee headed by an outside director.

(2) Decision-making system

The UBE Group has established three organizations for decision-making on management. These bodies are the Board of Directors, the Group Strategic Management Committee and the Internal Company Operating Committee and Division Operating Committee.

The Board of Directors deliberates and makes decisions on matters stipulated by the Companies Act (Act No. 86 of 2005, including subsequent amendments), as well as basic company policies, and critical matters on executing business from a medium- to long-term perspective on behalf of the interests of shareholders.

The Group Strategic Management Committee deliberates and makes decisions about the allocation of resources for the entire Group and matters needing coordination within the Group, as well as important matters that concern the entire Group.

The Internal Company- and Division-based Operating Committees deliberate and make decisions on UBE Group business strategy and other important matters at the internal company and business division levels.

(3) Assurance of compliance of Group directors and employees to law and Articles of Incorporation

11 As of April 1, 2018.

The Personal Action Guidelines have been established in order to develop corporate ethics among the UBE Group companies. The guidelines outline the standards and criteria for compliance required in corporate activities, which directors and employees are expected to adhere to. Also, compliance officers are appointed to secure and promote compliance throughout the organization, and the Compliance Committee is operated with legal advisors as an advisory body for compliance officers.

Ube Industries operates the UBE C-Line as a direct hotline for directors and employees to report on compliance matters by going outside of normal reporting channels to ensure rapid detection and swift correction of compliance issues. Furthermore, in order to complement UBE C-Line, separate, independent hotlines have also been established at the Chemicals Company, the Energy & Environment Division and the Group companies they are responsible for.

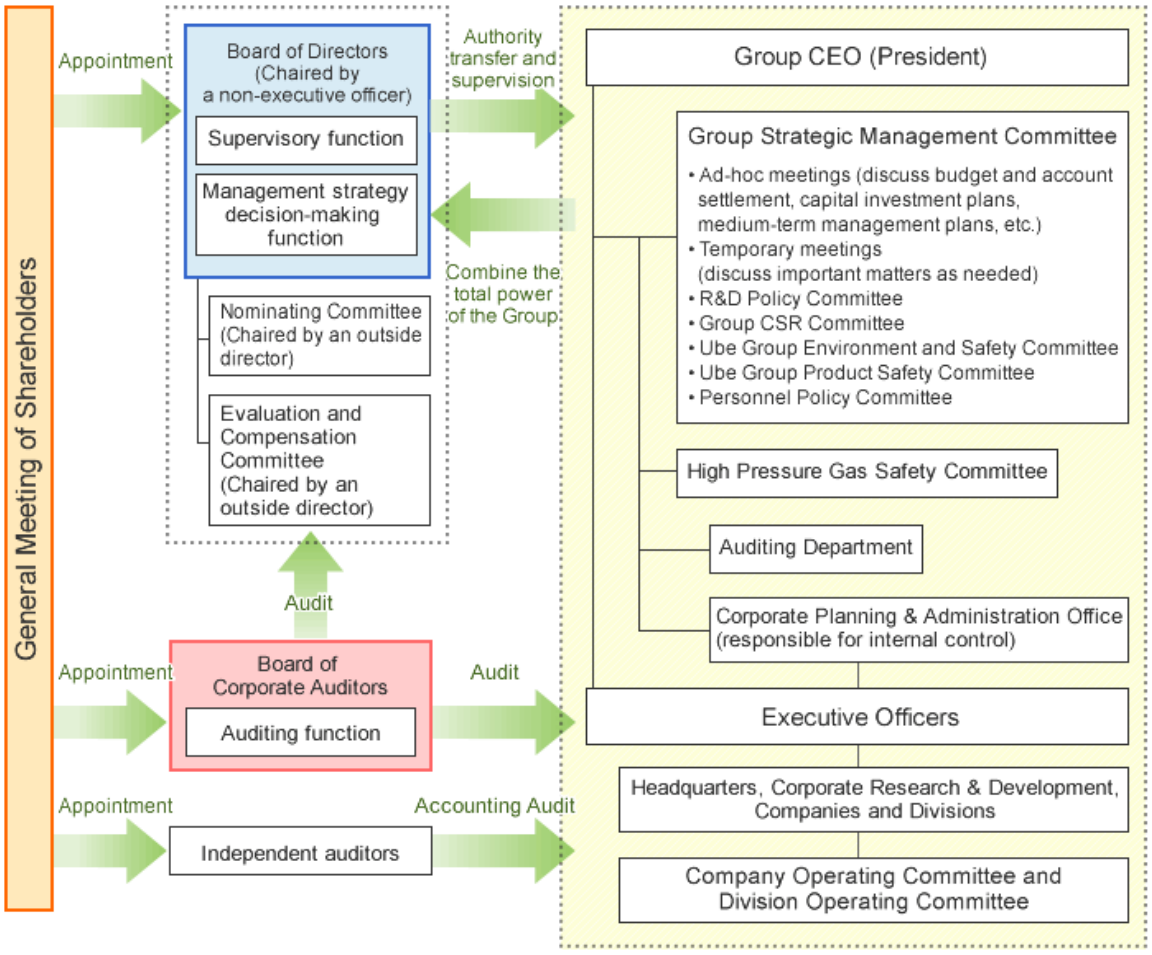


Figure 4: Overview of Company Organizations and Internal Control System at Ube Industries

List of Directors and Corporate Auditors

Office	Name
Chairman of the Board of Directors & Director	Michio Takeshita

President & Representative Director	Yuzuru Yamamoto
Representative Director	Tadashi Matsunami
Director	Hideyuki Sugishita
Independent Outside Director	Takashi Kusama
Independent Outside Director	Keikou Terui
Independent Outside Director	Takashi Shoda
Independent Outside Director	Mahito Kageyama
Corporate Auditor	Takanobu Kubota
Independent Outside Corporate Auditor	Seiichi Ochiai
Independent Outside Corporate Auditor	Miyako Suda

Figure 5: List of Directors and Corporate Auditors

List of Executive Officers

Office	Name	Responsibilities
President and Executive Officer	Yuzuru Yamamoto	Group CEO
Senior Managing Executive Officer	Tadashi Matsunami	Company President of the Cement & Construction Materials Company, with responsibility for the Energy & Environment Division
Senior Managing Executive Officer	Tokuhisa Okada	Company President of the Machinery Company
Senior Managing Executive Officer	Masato Izumihara	Company President of the Chemicals Company
Managing Executive Officer	Junichi Misumi	With responsibility for the Information System Department and the Ube Corporate Service Department
Managing Executive Officer	Masahiko Nojima	General Manager of the Engineering Plastics, Caprolactam and Industrial Chemicals Division and of the Atlantic Operational Unit, Chemicals Company
Managing Executive Officer	Yukio Hisatsugu	Vice President of the Machinery Company
Managing Executive Officer	Makoto Koyama	Vice President of the Cement & Construction Materials Company, with responsibility for the Group Company Department and Technical Development Center
Managing Executive Officer	Hideo Tamada	Group CCO, General Manager of the General Affairs & Human Resources Office and Procurement & Logistics Division, with responsibility for Group CSR
Executive Officers	Makoto Aikawa	With responsibility for the Environment & Safety Department and Intellectual Property Department

Executive Officers	Morihisa Yokota	General Manager of the Corporate Research & Development
Executive Officers	Genji Koga	General Manager of the Production Division of the Chemicals Company, with responsibility for the Chemicals Environmental Safety & Quality Assurance Department
Executive Officers	Hiroshi Nishida	Director and Senior Managing Executive Officer of Ube Material Industries, Ltd.
Executive Officers	Masayuki Fujii	Group CFO, General Manager of the Corporate Planning & Administration Office
Executive Officers	Yasushi Konno	General Manager of the Pharmaceutical Division
Executive Officers	Yuuki Nishida	General Manager of the Battery Materials and Fine Chemicals Division, Chemicals Company
Executive Officers	Hidetsune Miura	General Manager of the Ube Chemical Factory, Production Division, Chemicals Company, with responsibility for the Ube Fujimagari Factory
Executive Officers	Yoshiaki Ito	General Manager of the Production & Technology Division and Resources & Products Division of the Cement & Construction Materials Company, with responsibility for the Material Recycle Division
Executive Officers	Yuuzo Hanamoto	General Manager of the Energy & Environment Division and Coal Business Unit
Executive Officers	Hisaaki Yokoo	General Manager of the Administration Department, Chemicals Company
Executive Officers	Masayoshi Ota	General Manager of the Strategy & Business Planning Department of the Chemicals Company. with responsibility for the Development Department
Executive Officers	Keiichi Nagata	General Manager of the Polyimide and Specialty Products Division, Chemicals Company
Executive Officers	Masaro Suehiro	General Manager of the Asia Operational Unit, Chemicals Company
Executive Officers	Brunode Bière	President of Ube Corporation Europe S. A. U.
Executive Officers	Shigeru Ouchi	General Manager of the Cement Department, Cement & Construction Materials Company, and Managing Executive Director of Ube-Mitsubishi Cement Corporation
Executive Officers	Mitsuo Ono	General Manager of the Planning & Control Department, Cement & Construction Company

Figure 6: List of Executive Officers

Chapter 3: Categories of Improprieties and Criteria for Determining Improprieties

I. Categories of Improprieties

The improprieties in the UBE Group, which were the subject of The Investigation, are wide-ranging, as detailed in Chapter 4 below, but they are broadly categorized as follows based on the form of the acts.

Fabrication of test results	- Test results are fabricated without conducting testing for check points in accordance with laws and regulations or official standards based on the certification of public institutions (hereinafter referred to as "Official Standards"), or the specifications agreed upon with the customer.
Alteration of test results	- After conducting test items in accordance with Official Standards or the specifications agreed upon with the customer, i) the test results are altered so that they meet the Official Standards or the customers' specification standards because the results did not meet such standards; or ii) the test results are altered inside the range of the standards even when such standards were met. - Product test results are altered at the request of a customer, etc.[12]
Use of different testing methods	- Testing is conducted with the intentional use of a testing method different from the one explicitly stated in the specifications agreed upon with the customer. - Testing is conducted with the intentional use of a testing method different from the one reasonably expected from the objectives of the contract with the customer, even though it is not explicitly stated in the specifications.
Addition of raw materials from a different place of origin	- The product is mixed with raw materials from a different place of origin than that specified in the Official Standards or the specifications agreed upon with the customer.

II. Criteria for Determining Improprieties

From the impropriety acts outlined in I. above, The Committee has established the criteria: (i) breaches of laws and regulations on product quality and indication; (ii) breaches of Official Standards on product quality and indication; (iii) deliberate breaches of (specifications stipulated in) contract with the customer; and (iv) other deliberate fabrication or alteration of test results, as detailed below. Then The Committee determines that any acts that fall into one of these categories are improprieties. These criteria are described in detail below.

(i) Breaches of laws and regulations on product quality and indication

The act of using an indication on goods in a way that is likely to mislead as to the place of origin, quality, etc., or

12 This item is included here because there were improprieties due to requests from trading partners.

the act of transferring (meaning trading), etc. of the goods so indicated (hereinafter a "Misleading Act") falls under unfair competition as provided for in Article 2, Paragraph 1, Item (xiv) of the Unfair Competition Prevention Act (Act No. 47 of 1993, including subsequent amendments) of Japan. The Act also provides for penal provisions for such Misleading Acts (Article 21, Paragraph 2, Items (i) and (v) of the said act). To fabricate or alter product test results entered on a test report and presenting it to a customer or to falsify the origin of a product in a contract with a customer potentially fall under a Misleading Act of an indication likely to mislead as to the quality or place of origin of the goods on the documents used in the transaction, and in that case could be a breach of laws and regulations that is subject to penal provisions.[13][14]. Therefore, The Committee determined such acts that potentially fall under criterion (i) to be improprieties.

(ii) Breaches of Official Standards on product quality and indication

Some of the products that the UBE Group provides to customers are subject to Official Standards. The Official Standards vary according to individual products, but especially in cases where it is necessary to comply with standards based on the Industrial Standardization Act (Act No. 185 of 1949, including subsequent amendments, hereinafter referred to as the "JIS Act") or the Building Standard Act (Act No. 201 of 1950, including subsequent amendments), The Committee determined the manufacture and shipment of products that do not meet these standards as improprieties. When Official Standards are established pursuant to specific laws and regulations, breaches of said standards are also potentially breaches of such governing laws and regulations, and those cases not only fall under criterion (ii) but also under criterion (i) above.

(iii) Intentional breaches of contract with a customer, or specifications detailed in contract

The Committee determined that the following cases are improprieties due to breach of contract with the customer—i) fabricated or altered test results are entered in test records, ii) products from a place of origin different from that stated in specifications are shipped, and iii) products are shipped by concealing the fact that the tests explicitly requested on the specifications are not conducted intentionally. When, although there is no breach of explicit description of specifications contrary to the purport of the contract intentionally performed, The Committee determines such act as an impropriety as well, because it is deemed to be equally dishonest as a breach of explicitly stated specifications.

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13 When false values entered in the test report are inferior to the actual test results (that is, when the actual product quality is better than that falsely described in the test report), such cases may potentially be considered to fall under breach of the Unfair Competition Prevention Act.
It is because (i) Article 2, Paragraph 1, Item (xiv) of the Unfair Competition Prevention Act merely defines the Misleading Act as "an indication that is likely to mislead" without establishing criteria as to the inferiority or superiority between the false and actual quality. (However, Article 5, Item 1 of the Act against Unjustifiable Premiums and Misleading Representations (Act No. 134 of 1962, including subsequent amendments), another law to regulate product misrepresentations as in our case, defines a misleading representation as "Any representation where the quality, standard or any other particular relating to the content of goods or services is portrayed to general consumers as being much better than that of the actual goods or services," and excludes product representations indicating inferior quality to the actual quality. This provision should also be noted.)
(ii) The Judgement of the Full Bench of the Supreme Court, March 22, 1978, *Keishu* Vol., 32, No. 2, page 316 concerns a certificate of sake of the special grade affixed to sake actually classified as second grade under the Liquor Tax Act (Act No. 6 of 1953, including subsequent amendments), and judges that "even if the quality of the particular (second grade) sake were substantially equal to the special grade sake, it should be interpreted as constituting a breach …of the Unfair Competition Prevention Act."

14 Falsifying the test results in the product test reports or the place of origin of the product and misleading the consumer that the product conforms to the specifications to receive monetary compensation may also qualify as fraud (Penal Code (Act No. 45 of 1907, including subsequent amendments) Article 246, Paragraph 1.

(iv) Other deliberate fabrication or alteration of test results

When products with intentionally fabricated or altered test results are sold to a third party or otherwise distributed in the market, The Committee determines that such cases are improprieties in consideration of the dishonest nature of the cases, even though items (i) through (iii) above do not apply.

Chapter 4 Facts Ascertained concerning Improprieties

I. Ube Industries (non-consolidated)

1. Polyethylene

(1) Outline of improprieties and products involved

Polyethylene which is manufactured at the Chiba Petrochemical Factory and sold by Ube-Maruzen Polyethylene, an affiliate of Ube Industries, is a pelletized product known for high transparency, high gloss, low odor, water resistance, chemical resistance, and other characteristics. It is used for various products such as wraps for packaging foods and chemicals, agricultural films, ropes, pipes, plastic containers and the like.

There were improprieties of not actually testing 16 of the test items required in the specifications agreed on with customers for the polyethylene to be manufactured and shipped mainly for extrusion coating of wire cables and the like. Nonetheless, a test record containing arbitrary numerical values satisfying the required standards was issued as the test results, and the product was shipped with it.

(2) Regular work flow

a. Test items

The test requirements, standard values, and test frequency for polyethylene "product inspections" are determined in specifications agreed on with customers. Therefore, although the number of test requirements and frequency for the product inspection varies with each customer, the main test requirements include melt index, density, contamination, film inspection, particle size, environmental stress cracking, low-temperature brittleness, insulation resistance, yield strength, breaking strength, elongation, dielectric constant (ε), and dielectric loss (tan σ).

Among these test items, the melt index, density, film inspection, particle size, etc. are also requirements for the factory's "process inspection." The allowance of the standards in the process inspection is narrower than those specified in the specifications.

b. Product inspection

Product inspection at the Chiba Petrochemical Factory is undertaken by the supervisor and staff of the Quality Assurance Team.

The testers perform the product inspection according to the manual prescribed for each test requirement. They are supposed to write inspection results by hand in the daily inspection report, while entering the results in the "operation management system" designed for recording the product inspection results, making acceptance decisions, and some other purposes.

After all the necessary tests have been conducted, the supervisor has to confirm the test results in the inspection log, make an acceptance decision in compliance with company standards, and enter the result in the inspection log.

c. Issue of test record

Test records are issued through the operation management system.

The computer system has pre-set test requirements and standard values necessary for each product, and when test results are entered in the value input column, the acceptance decision for the product inspection will automatically be performed, and the test result is registered in the test record.

The Quality Assurance Team Leader is supposed to confirm on the operation management system that all necessary tests are being conducted and that the test results meet the standards of the specification and issue a test record.

(3) Details of improprieties

a. Aspects of improprieties

Normally, as described in (2) above, it is necessary to enter the results in the operation management system after conducting tests for all the test requirements in the customer-agreed specification to issue a test record.

However, actually at the Chiba Petrochemical Factory, tests were not conducted for the following 16 test requirements. The product was shipped with a test record showing arbitrary numerical values.

In fiscal 2016, products shipped without tests for one or some of the specification-designated test requirements corresponded to approximately 7.7% of the polyethylene shipments in that year.

Test areas	Actual test not conducted
1. Yield strength, breaking strength, elongation	Material strength, stickiness index
2. Bonding strength with copper	Index of confirmation of combination with additives
3. Aging yield strength, aging breaking strength, aging elongation	Material heat resistance deterioration characteristic index
4. Peeling strength	Index of confirmation of combination with additives
5. Bending stiffness, bend elastic constant	Material hardness index
6. ESCR, ESCR after kneading	Material long-term reliability index
7. Embrittlement temperature	Material low-temperature reliability index
8. $\varepsilon \cdot \tan \delta$	Electric wire information communication range index
9. Volume resistivity	Electric wire insulation index
10. Smoke quantity	Index of presence of halogen compounds
11. Emitted gas pH	Index of presence of halogen compounds
12. Dielectricity of gas emitted during combustion	Index of presence of halogen compounds
13. Hardness (Shore D)	Material hardness index
14. Heat deformation	Material heat resistance index

15. Coefficient of friction	Electric wire entrainment index
16. Temperature when foaming starts	Foaming agent type confirmation index

b. Circumstances behind start of improprieties and ongoing status

(a) Background situation

The Chiba Petrochemical Factory started operations as a polyethylene manufacturing plant in 1964.[15]

The polyethylene business began to record profits in 2003, but there were deficits immediately after the business start. Out of the 38 fiscal years (1965 to 2002) before profits were made, an ordinary loss was recorded in a total of 27 fiscal years.[16]

Therefore, at the factory, consolidation of organizational bodies and personnel reductions were carried out from time to time as part of cost reduction measures.

In addition, the testers in the Quality Assurance Department considered, based on general polyethylene properties, that such physical properties as the tension test and electrical characteristics would always pass the standards if other tests such as melt index and density met the standards.

(b) Start of improprieties and ongoing status

Under the circumstances of (a) above, it became difficult to conduct all the tests required in the specification due to the addition of new product grades and increases in production volume. Thus, from 1986 at the latest, inappropriate shipment of products was started with test records with arbitrary values issued without actual tests for tension or electrical characteristics.[17,18]

Even after the improprieties began, the Quality Assurance Team carried out inspections of stored product samples during annual non-operating time periods for facility repairs for post-shipment confirmation of meeting company standards. However, in 2014, even these after-the-fact checks ceased due to a shortage of personnel.[19]

(c) Improper use of operation management system

In 1992, an operation management system was deployed at the Chiba Petrochemical Factory for centralized handling of production management, process testing, recording product inspection results, acceptance decisions and other steps. It was an expanded version of the previous system PE-LAN, used until then to record and manage test results.

15 In addition to polyethylene, the Chiba Petrochemical Factory began manufacturing synthetic rubber in 1971.
16 An ordinary loss was recorded for 12 consecutive years from 1991 to 2002 after the collapse of the bubble economy in Japan.
17 With some tests, another reason for not conducting the tests may be that it took much time to perform the test, including the preparation of test specimens, in addition to the stability of test results.
18 A reason for continued improprieties may also be attributed to the omission of product inspection as a means of cost reduction, which resulted in hiding the personnel shortage, making it difficult to rectify the situation of insufficient manpower.
19 The reasons for conducting post-shipment tests are not necessarily clear, but some of the testers in the Quality Assurance Team stated that there was resistance to not conducting the tests at all.

This operation management system has been updated several times since its introduction. In one of the upgrading opportunities from1996 to 1998, the supervisor and staff of the Quality Assurance Team as well as other on-site workers requested that a program be added to display random values as test results that met company standards for selected test requirements, without bothering to enter test results, giving birth to the improprieties currently under review.[20,21]

In the operation management system, the test requirements for which this setting was made are marked with "S." The Quality Assurance Team used this function, calling the act of putting false test results in the test record "*sakubun* [composition]," meaning entering arbitrary figures of non-existing tests.

In addition, although this setting was performed by several specific employees, there were no particular restrictions on access, and anybody in the team could use it.

c. Recognition of parties involved

(a) Actors

In the Quality Assurance Team, this Polyethylene Case was passed by the supervisor to individual testers, with specific instructions and explanations. The testers involved affirmed, saying, "Personnel shortages make it impossible to do all the required tests; it's unavoidable to omit some," and "If the density and melt index meet the company standards, there's no way that it won't meet the more lax standards in the specifications, so there's no problem with quality." The fact that they said these things suggests their respect for norms became diluted as the improprieties persisted continuously over the years.

(b) Those who noticed improprieties

As described in (2) c above, the Quality Assurance Team Leader is in a position to issue a test record as the person ultimately responsible for quality assurance.

Since 2002, five people have served as team leader. All but one of them confirm that, although they were aware of the improprieties after receiving problem reports from the supervisor, they gave complete responsibility for issuing test records to the supervisor by giving the team leader's seal to the supervisor.[22] In addition, two of those who recognized the improprieties at the time of serving as team leader later became Quality Assurance Group Leader and failed to report as group leader the improprieties to their superior, the factory manager.

On the other hand, other group leaders, not those who knew about the improprieties as team leader and later were

20 Some employees stated that, PE-LAN also had a function to display a random number as a fake test result for an untested item, but the details of this matter have not been established.

21 This Committee could not confirm this random value display function, since it was abolished immediately after the improprieties were discovered by the In-house Investigation.

22 The Team leader who denied awareness of the improprieties admitted, just like other leaders, that the task of issuing the test records was left to the supervisor.

promoted to group leader, stated that they were not aware of the improprieties, since they were preoccupied with their other tasks, and quality assurance was left to the team leaders.[23] Actually, facts that cast doubt on the content of such statements have not been confirmed.

In addition, The Committee has not confirmed specific facts suggesting that executives of Ube Industries, successive factory managers or other officials were involved in these improprieties or that they did not take corrective measures while recognizing them.

d. Response after discovery of improprieties

During a check of the product inspection activities, the Quality Assurance Group leader who was appointed in April 2017 noticed that tension test results were shown in the test records although the equipment for conducting such tests was out of order. Therefore, suspecting that at least some of the tests were not being conducted, the group leader tried to investigate the situation of the improprieties independently, and after considering measures for normalization, reported the matter to the factory manager of the Chiba Petrochemical Factory and the representative director of Ube Maruzen Polyethylene in October 2017.

In November 2017, when rectification measures were being considered at the Chiba Petrochemical Factory as mentioned before, an internal investigation of this matter was initiated, and the improprieties were reported to the management.

Immediately after the discovery of the Polyethylene Case at the Chiba Petrochemical Factory, the random display function of test result values in the operation management system was disabled, and the number of testers in the Quality Assurance Team was increased by five. All the tests are now being conducted in accordance with the specifications, and in addition, test specimens are kept to demonstrate that testing is actually being carried out.

2. Nylon

(1) Outline of improprieties and products involved

Nylon resin manufactured by the Ube Chemical Factory Chemical Manufacturing Department (hereinafter, "Nylon") is used, after being molded, as films, automotive parts and coating materials.

At the Ube Chemical Factory, there were improprieties involving the issue of test records showing certain test values (hereinafter "Constants") for Nylon manufactured and shipped for specific customers without conducting the tests required on the specification.

(2) Regular work flow

The improprieties involved the testing of the melting point, specific gravity, and additive amount[24] (hereinafter

23 The current Quality Assurance Group was the Environmental Safety & Quality Assurance Group from 2002 to 2017, and the group leader was concurrently in charge of environmental safety-related responsibilities.

24 "Additive amount" as used here is a generic term for the amount of various additives added to the nylon, and in the specific test

collectively, “Melting Point, etc.”), which are required on the specification sheet agreed on with specific customers, and the recording of the test results of these points on test records.

Ube Industries began manufacturing nylon in 1984, and in the early 1990s at the latest, quality assurance started using the host computer (hereinafter, “Former System”) managed by the Quality Assurance Group in the Production Management Section, Plastics Department, which corresponded to the Nylon Team, Chemical Product Quality Assurance Group, Chemical Manufacturing Department in the Ube Chemical Factory (hereinafter “Nylon Team”) started using the system. Thereafter, in 2004, changes were made to launch a new system called plastic quality control system by adding new functions such as code-based customer control while maintaining the Former System programs and data. From that year to the present, quality control was carried out using the plastic quality control system.

When the Nylon Sales Department of the Nylon, Lactam, and Industrial Chemicals Department, Chemicals Company, enters into a new specification agreement with a customer, the Nylon Team staff should enter the test requirements to be shown in the test record in the spastic quality control system master in accordance with the contracted specification.

Tests of the Melting Point, etc. of nylon are carried out by Ube Logistics Service, Ltd., or UBR, by contract from Ube Industries, and the procedure is as follows.

1. The Nylon Team advises UBR of the test requirements by means of the plastic quality control system.
2. UBR enters actual test-obtained measurement values of the necessary test items in the plastic quality control system. Based on such results entered, the plastic quality control system automatically makes a provisional determination as to whether or not the nylon is of sufficient quality for shipment.
3. The Nylon Team receives the test results on the plastic quality control system, confirms the adequacy of the system-controlled provisional judgment result, confirms that the item has passed (final judgment), and then issues a test record from the plastic quality control system.

(3) Details of improprieties

a. Aspects of improprieties

Normally, as described in (2) above, if part of the Melting Point, etc. is specified as a test requirement in the specification and is entered in the plastic quality control system master as a test item to be shown in the test record, the actual test has to be carried out, and the test results must be shown in the test record. However, the following improprieties were carried out: i) Test records were issued for specific customers just showing Constants as measured Melting Point, etc., without actually measuring these items, or ii) Test records were issued for specific customers showing a Constant as additive amount, not referring to actual additive amount in the test.

In other words, normally, actual test results that UBR had entered in the plastic quality control system were to be

requirements in the test record, reference to specific additives such as “amount of impact resistance agent” is used.

shown in the test record, as specified in (2) above. However, by entering a Constant in the constant field for a specific test item in the plastic quality control system master, the system was able to issue test records showing Constants, regardless of whether or what UBR entered in the system.[25] As a result, in the test records issued to specific customers, the Melting Point, etc. should show the actual measurement values as required in the specification, whereas when a Constant is set for the Melting Point, etc. in the plastic quality control system, a test record showing the Constants was issued whether or not test results were entered or what values were entered.[26]

b. Circumstances behind start of improprieties and ongoing status

The manual issued for the Former System issued in October 1997 said "Constant: When fixed values or characters, such as specific gravity, melting point, shape, color tone, are to be analyzed, enter constants. These values or characters are output as the analysis values of the record."[27] Therefore, it is supposed that the setting of constants, such as melting point etc., was made at this time at the latest.[28] However, in interviews of the staff involved in the management of the Former System at that time or in other surveys, it was not possible to determine the specific timing of the start of the Constant input or any other circumstances.

However, several employees who are now assigned to nylon quality assurance operations or who were responsible in the past mentioned that the melting point does not vary unless its raw materials are subject to any special processing (addition of additives etc.), and therefore it was probable that a Constant was used since there was little significance in actually measuring it. Similarly, with regard to specific gravity, several employees stated that as long as no special processing (addition of additives etc.) is performed, there is little significance in measuring it. Some other staff said that another reason for the use of Constants might be that the specific gravity test was time-consuming. Regarding additive amounts, some said that one reason for Constant input was that, if additive blending is made correctly in a normal procedure, the test result figures never vary greatly except for some measurement errors. Therefore, it is considered that such circumstances peculiar to each test requirement for nylon were a factor leading to the omission of tests and setting Constant inputs.

Although the Former System was taken over by the plastic quality control system in 2004, the previous functions were basically inherited by the new system, so the setting of Constants was not discussed in the company in preparation for the system change. After that, system changes of the Constant setting were not discussed specifically in the company until the problem was raised at the conference within the Nylon Team in March 2016,

25. In the plastic quality control system, Constants are used basically to record a non-variable description of characteristics to be shown on the test record. For example, when UBR judges the external appearance acceptable and enters "F," the test record will automatically have "Good" printed. Therefore, not all Constant settings are necessarily inappropriate. Unlike these cases, the improprieties now under review refer to operations in which Constant values were entered when actual values should be shown in the test records, not Constants.

26 Some employees involved in the improprieties said that it was not correct to say melting point and specific gravity were not tested at all, but that these tests were conducted periodically to confirm that there was no discrepancy with the Constants set in the system. However, it was not possible to confirm any specific records showing the specific frequency of this alleged testing.

27 However, even those who have been responsible for issuing test records since that time said that they were unaware of the manual. So, it is not clear how the manual was actually recognized or used in the company.

28 The employee responsible for issuing test records at that time stated that there were cases in which the test record was written by hand referring to the catalog. So, there is a possibility that the use of Constants for the melting point, etc. without actual measurement started before the introduction of the Former System. However, the specific timing has not been established.

as described in “d.” below.

c. Recognition of parties involved

(a) Actors

The data entries in the plastic quality control system master and test record issuing were conducted by several people from the Nylon Team. Of these, the related employee who has performed these tasks the longest since 1993 to the present says that, at the time of system master entering, he received instructions from the then section head and supervisor (or the deputy supervisor) to enter Constants such as the Melting Point, etc. Others who were responsible for the same tasks similarly affirm that they were doing these tasks with the recognition of the Constant entry setting.

Also, the supervisor (or the deputy supervisor) at the time of the Former System launch and manual preparation states he remembers that the Constants were set for Melting Point, etc. from that time, although he did not remember circumstance details.

However, as stated in “b.” above, the entry of Constants was made in the plastic quality control system in the late 1990s at the latest, but the then section heads either denied the Constant setting or said they had no memory of it.

(b) Those who noticed improprieties

The employee who served as Nylon Team leader in the mid-2000s recognizes that the use of melting point Constants was reported, but he states that since he understood that technically the value would not change, he saw little reason to conduct actual tests in accordance with the customer-agreed specification.

The setting of the Constant entry can be checked on the master screen of the plastic quality control system, but it cannot be checked without authorization for viewing the master screen. Therefore, even for a party needing to use the plastic quality control system, such as at UBR, it was impossible to be aware of the setting of the Constant entry in the system.

It has not been confirmed that there are any facts that would suggest that Ube Industries executives were involved in this matter or that they did not take corrective measures while being aware of it.

d. Response after discovery of improprieties

About March 2016, at the conference within the Nylon Team, an employee responsible for entering the system master input and issuing test records on the plastic quality control system reported that a Constant was shown for melting point on the test records.[29] In the conference there were staff under the Nylon Team leader. After the meeting, the team leader instructed the staff to stop using Constants for test results and to actually conduct tests in

29 The employee concerned said that, having entered Constants for many years, he had usually been little aware of the problem, but for some reason he remembered it and reported it just to make sure that there was no problem. However, no minutes of the meeting remain, and the detailed situation has not been made clear.

accordance with the specification. In response to this instruction, UBR was requested to undertake the melting point tests and thus tests were started, but the Constant entry setting was not canceled. As a result, the constant set on the system was given priority over the actual UBR-entered values, so the situation of issuing test records showing Constants still continued.

Afterwards, in October 2017, a responsible employee noticed that the Constant setting on the system was not canceled. So, the system function of entering Constants on the plastic quality control system for specific customers was finally cancelled. However, the system cancellation was not across the board, with the Constant setting remaining for a number of customers.

After that, some customers had questions about sudden variations of test values shown on the test record, which was made due to the change from Constants to actually measured values, and they made inquiries. Also, comprehensive response measures were taken at the start of the investigation. Thus, the setting of all Constant entries on the system was canceled by April 25, 2018.[30]

On top of that, while entering new test items in the master was made by assigned employees alone before, now the procedure has been changed so as the entry should be made always with the approval of the Nylon Team leader.

3. Polyimide

(1) Outline of improprieties and products involved

Polyimide film[31] manufactured at Ube Chemical Factory and the Sakai Factory (hereinafter "Polyimide") is a product manufactured from Ube Industries' own product, s-BPDA,[32] and it is used mainly for the substrate of circuit boards.

The improprieties in Polyimide involved using a test method for linear expansion coefficient that was different from the one required in the specifications.[33] Test results obtained in this non-required test were converted to the values of the test method required in the specification and shown in test reports. Product shipment was made with such rest reports.

(2) Regular work flow

The main test requirements for Polyimide agreed on with the customer concern appearance, dimensions, characteristics, etc., and the improprieties occurred to a test item in characteristics, i.e., coefficient of linear expansion.[34]

30 Furthermore, a new setting was made to show a warning on the screen if a Constant input remains undeleted.
31 Polyimide is divided into several grades according to specifications and characteristics, in which the improprieties under review were found in two of these grades.
32 s-BPDA stands for biphenyltetracarboxylic acid dianhydride, which is produced after heat treatment (dehydration) of s-BPTA biphenyltetracarboxylic acid (s-BPTA).
33 Coefficient of linear expansion is a numerical value expressing the change ratio between the initial size of a molded product and thermal expansion for each temperature degree.
34 The improprieties were also committed at the Sakai factory. However, as the workflow of the factory was more or less the same as

Testing of linear expansion coefficient of Polyimide produced at the Ube Chemical Factory is contracted to the Functional Analysis Team in the Scientific Analysis Laboratory of UBR. The Specialty Products and Fine Chemicals Quality Assurance Group of the Ube Chemical Factory asks the team for testing, providing product samples.

On receiving these requests, the team conducts the necessary tests according to the request details. Testing for coefficient of linear expansion has to be conducted in accordance with the tensile method[35] as specified in the specifications, and the test results obtained by the measuring device should automatically be transferred to the inspection input details screen of the quality management system. The Specialty Products and Fine Chemicals Quality Assurance Group must make an acceptance decision on the basis of the test results entered in the quality management system, issue a test record if all the test results meet the standards of the specifications, and deliver the record to the customer.

(3) Details of improprieties

a. Aspects of improprieties

Normally, as described in (2) above, it was necessary to test the coefficient of linear expansion using the tensile method in accordance with the specifications agreed on with customers. Nevertheless, the Specialty Products and Fine Chemicals Quality Assurance Group actually instructed the UBR Laboratory's Functional Analysis Team to employ a test method called the compression method[36] different from the test method described in the specification. The obtained test result using the compression method was converted to a figure which would have been obtained if the test had been carried out by means of the tensile method, and the converted figure was shown in the test record.

Specifically, the test result measured in the compression method was automatically transmitted through the measuring instrument to the quality management system, and at that time a special function in the quality management system converted it to a test result that would have been obtained had the tensile method been used, and the converted figure was then recorded in the system. Then the employee in the Quality Assurance Group responsible for issuing test records issued a test record showing the test result converted into the tensile method and shipped the product.

The function for converting compression method results equivalents to the tensile method results was, as in b. (a) below, established in the system by Ube Information Systems Inc. at a request made by the Quality Assurance Group when it was determined that it was necessary to conduct tests for a specific customer in accordance with a

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that of the Ube Chemical Factory, below is the description based on the Ube Factory workflow.

35 The tensile method is a test method that uses a special measuring device called TMA to measure the elongation by pulling a polyimide with the device measuring mode set to "tension," and calculating the coefficient of linear expansion.

36 The compression method is a test method that uses the same measuring device as that of the tensile method. With the measuring mode set to "compression," it measures the elasticity of the polyimide under compression, and calculates its linear expansion coefficient.

test method different from Ube Industries' intentions.

b. Start of improprieties and ongoing status

(a) Start of improprieties

From 2010, the Ube Chemical Factory was considering starting with a specific customer a new transaction of the same grade of Polyimide as that involved in the improprieties now under review. Initially, the Ube Chemical Factory proposed a specification to the customer assuming that the compression method would be used for the linear expansion coefficient test.

However, in May of that year, in discussions with the customer about developing the Polyimide, the customer asked that the tensile method rather than the compression method be included in the specification.

According to statements made by the then staff of the Quality Assurance Group, it was recognized that the linear expansion coefficient test results of the tensile method were not stable depending on testers or detailed test methods. Thus, the Polyimide and Specialty Products Development Department (hereinafter "Specialty Products Development Department") agreed with the customer to mention the tensile method for the linear expansion coefficient test in the specifications on condition that they would devise stable measurement procedures using the tensile method by the time of actual start of polyimide trading, Then the Quality Assurance Group instructed the UBR Laboratory's Functional Analytical Team to use the compression method for the linear expansion coefficient test as a temporary measure until the necessary method was devised.

However, a stable test measure base on the tensile method was not actually devised even when polyimide trading was started with the customer in December of the same year, and the improprieties started.

(b) Circumstances after start of improprieties

In November 2012, an employee of the Quality Assurance Group asked staff in the Specialty Products Development Department about the status of improvements to the stability of tensile method test results, and the latter responded that no improved method had been devised yet.

In July 2013, the customer asked Ube Industries to provide data on the test method for the coefficient of linear expansion. As a result, in the same month, the leader of Quality Assurance Group 2 of the Ube Chemical Factory checked the progress of improvements concerning the stability of tensile method test results by email with the leader of the Polyimide Group, Specialty Products Development Department, who responded that no improvement had been made. Incidentally, the recipients of the email included employees responsible for development including the General Manager of the Specialty Products Development Department at the time as well as those for sales such as the principal members of the Polyimide Sales Group.

In April 2016, the then General Manager of the Ube Chemical Factory instructed the leader of the Quality

Assurance Group 2 of the factory to check for any improprieties or other problems concerning testing conducted throughout the entire factory.[37] The group leader instructed each team leader of Group 2 under his supervision to make the relevant checks.

In June of that year, the group leader summarized the problems including the improprieties under review and reported them to the General Manager of the factory, the then Polyimide and Functional Business Unit Director, and the Sales group leader at the time. In response, the Factory Manager and others ordered the leader of the Quality Assurance Group 2 of the factory to rectify the improprieties.

Following this, methods enabling stable measurement based on the tensile method were studied in the Specialty Products Development Department and the Specialty Products and Fine Chemicals Quality Assurance Group. Also, these matters were studied in the monthly meeting held with the participation of each department related to Polyimide manufacturing, sales and technology. However, no relevant method was established, and the improprieties continued until May 2018.

c. Recognition of the parties involved

(a) Actors

As stated in b. above, these improprieties were perpetrated by staff responsible for issuing test records of the Quality Assurance Group from December 2010 to May 2018.

On the other hand, the testing staff of the UBR Laboratory's Functional Analysis Team did not recognize that the tensile method was required in the specification for the specific customer. They say that the compression method was carried out on instructions from the Quality Assurance Group, and it has not been confirmed that they carried out the compression method tests while recognizing it as inappropriate conduct.

(b) Those who noticed improprieties

Employees below group leader of the Polyimide Sales Group, Specialty Products and Fine Chemicals Quality Assurance Group, and Specialty Products Development Department at the time of the start of the Polyimide business with the specific customer were aware that the linear expansion coefficient tests were conducted using the compression method, not the tensile method required as the test procedure in the specification agreed on with customer, and that test results were converted to the tensile method to be shown in the test records. On the other hand, there is no evidence to suggest that this was reported to the then General Manager of the Ube Chemical Factory.

However, as in b. (b) above, in June 2016 at the latest, the then Factory Manager, the then Business Unit Director and the then Sales group leader received a report from the leader of Quality Assurance Group 2. They were aware

37 The Group leader states that there was a possibility that the trigger of the improprieties was the falsification of fuel efficiency in the automobile industry, which was a serious social problem at the time.

of the improprieties, receiving the report that the polyimide measurement method differed from the specification.

d. Response after discovery of improprieties

As a result of discussion of changing the specification held after the improprieties came to light, the specification agreed on with all customers was changed by May 11, 2018 to allow a measurement method in which values from the compression method are converted to the tensile method.

4. s-BPDA

(1) Outline of improprieties and products involved

s-BPDA is manufactured at the Ube Chemical Factory for use as a raw material for polyimide to be produced at the factory, and also for sale to customers.

The improprieties in s-BPDA involved not actually testing for dehydration rate and total acid value, which are test requirements in the specifications agreed on with specific customers,[38] and issuing test records showing arbitrary values or values taken from other test results, and shipping the product.

(2) Regular work flow

The main test requirements of s-BPDA are purity, color tone, intrinsic viscosity and the like, which are regarded as standards in the specifications agreed on with customers. The preparation and agreement on specifications including specific test items is made by the Quality Assurance Group of the Ube Chemical Factory. All s-BPDA-related tests are contracted to UBR for actual operations. Specifically, the Manufacturing Group of the Ube Chemical Factory sends a "Special analysis request and result" form together with a sample of the manufactured product to the UBR Laboratory's Chemical Analysis Team for testing.

In response to this request, the analysis team must conduct tests in accordance with the method described in "Product s-BPDA inspection procedure" prepared by the Factory Quality Assurance Group for the test items shown in the special analysis request and result form. The test results must be entered in the special analysis request and result form and also entered in the functional quality management system.

Then, Team 1 of the Quality Assurance Group 2, Ube Chemical Factory, (hereinafter, "First Team") has to make an acceptance decision based on the test results entered in the functional quality management system, and issue a test record, then the team leader will stamp an approval mark in the field and the product will be shipped. In the test record form to the above specific customer, there is no test item concerning purity specified.

(3) Details of improprieties

a. Aspects of improprieties

38 The number of customers who had the dehydration rate and the total acid value as test requirements in the specification sheet was only two (as of April 2018).

The UBR Laboratory's Chemical Analysis Team was unable to stably obtain correct test results of dehydration rate or total acid value, even though the test was conducted according to the method described in the inspection procedure document, and the test results for the same sample were sometimes significantly variable. Therefore, the testers in the analysis team first wrote an arbitrary numerical value that satisfied the standards in the specifications as a test result in the special analysis request and result form, and also entered it in the functional quality management system.

Next, as shown in b. (c) below, from 2013 at the latest, the testing staff of the analysis team rounded the purity test result actually obtained by truncating the second decimal place to one decimal place[39] and showed it on the special analysis request and result form as the test results of dehydration rate and total acid value, and also entered them in the functional quality management system. In addition, treating the product as a passed product while recognizing the improprieties taken by UBR Chemical Analysis Team at about the same time at the latest, the First Team shipped the product to specific customers, issuing a test record showing the rounded purity test result to one decimal place and showing it as the test results for dehydration rate and total acid value.

b. Start of improprieties and ongoing status

(a) Start of improprieties

Details concerning the start of the improprieties concerning s-BPDA, and the subsequent circumstances cannot be clarified due to the retirement of the testers of the then UBR Chemical Analysis Team. Testers of the analysis team who became involved in the s-BPDA testing since 2003 say that they were only instructed to put any numerical value between 99.7 and 100.0[40] as the dehydration rate and total acid value test results without receiving any explanation of the reasons for not conducting actual tests from supervisors during the education for the s-BPDA test method. Thus, it is acknowledged that these improprieties began in 2003 at the latest.

Also, the testers stated that the method was being carried out habitually from sometime before April 2004 when s-BPDA test operations were transferred from the Quality Assurance Group of the Ube Chemical Factory to UBR.[41]

From this fact, it has been understood that these improprieties continued for many years starting in 2003 at the latest. Meanwhile, although the Analysis Team reported the improprieties to the Quality Assurance Group several times, as explained below, corrective actions or other response measures were not taken.

(b) Situation in 2011

In the Ube Chemical Factory, the quality assurance operations of s-BPDA were under the responsibility of the Chemical Products Team, Quality Assurance Group 1, (hereinafter, "Chemical Products Team") until 2009, when the job was transferred to the First Team, which was dealing with polyimide, a functional product. Still, the test

39 For example, when the test result of purity was 99.89, the dehydration rate and the total acid value were shown as 99.8.
40 The standard requirements agreed to with customers were 99.0% or more for both the dehydration rate and the total acid value rate.
41 From 1999, UBR received a contract for part of the tests from the Ube Chemical Factory Quality Assurance Group. In April 2004, an independent analysis center was launched within UBR and from the same month it gradually began to receive contracts for all the testing work from the Quality Assurance Group.

operations were carried out by the UBR Laboratory's Chemical Analysis Team, which was contracted from Ube Industries.

In the quality assurance conference (hereinafter, "QAQC Conference," which was regularly held between the Chemical Products Team and the UBR Laboratory's Chemical Analysis Team, started in September 2011, the deputy supervisor of the UBR Analysis Team prepared a report on the problem, saying that test results were put without actually conducting tests because correct results could not be obtained reliably following the test procedures. This report was emailed to the QAQC Conference participants and added to its agenda.[42]

At that time, the Chemical Team recognized the improprieties related to s-BPDA from the report from the UBR Laboratory's Chemical Analysis Team, but as it was not responsible for s-BPDA, it did not take action to rectify the issue. For the same reason, the Analysis Team's report on the improprieties was not passed from the Chemical Team to the First Team, so the First Team staff did not recognize the problem.

In this way, despite the fact that the UBR Laboratory's Chemical Analysis Team raised questions on the improprieties in the same month, no corrective action was taken at the Ube Chemical Factory, and the Improprieties continued.[43]

(c) Situation in 2013

At the end of February 2013, the First Team leader was preparing for an audit by a customer who had the dehydration rate and total acid value as standard requirements in the specifications when the team leader realized that tests had not been conducted for the dehydration rate and total acid value of s-BPDA. Therefore, the First Team leader had meetings with the Chemical Team leaders, the UBR Scientific Analysis Laboratory director, and the UBR Laboratory's Chemical Analysis Team leaders to discuss the improprieties.

At the time, when newly agreeing to product specifications with customers, the First Team did not treat the dehydration ratio or total acid value as standard requirements, in addition to the general standards such as purity. Furthermore, the First Team received an explanation from the Chemicals Team that there was a correlation between purity and dehydration ratio and total acid value. Some customers had already specified the dehydration rate and total acid value as standard requirements. So the First Team decided to try to get consent from such customers to

42 Although the quality assurance operations for s-BPDA was the responsibility of the First Team, the UBR test work continued to be carried out by the UBR Scientific Analysis Laboratory Chemical Analysis Team. It is probable that, since the main products then handled by the Analysis Team were the responsibility of the Chemical Products Team, except for s-BPDA, the UBR Scientific Analysis Laboratory Chemical Analysis Team raised these kinds of issues in the QAQC Conference held with the Chemical Product Team, rather than reporting it to the First Team.

43 When reporting the improprieties concerning s-BPDA tests to the staff of the Chemical Products Team, the UBP Laboratory's Chemical Analysis Team testers also reported improprieties with the tests of four products other than s-BPDA conducted by the UBR Chemical Analysis Team. However, just like the s-BPDA case, no corrective actions were taken. Later, in February 2015, the Analysis Team staff reported similar improprieties in the testing of 11 products other than s-BPDA, including the above four products, reported together with the improprieties under review, to the staff of the Chemical Products Team of the Ube Chemical Factory. Thus, all improprieties involving the 11 products were rectified after May 2015 at the latest. In this way, although a number of impropriety aspects were corrected at the same time, the s-BPDA problem was not corrected. The then General Manager of the Ube Chemical Factory said that it was because it took a long time to investigate whether there is a correlation between the purity and the dehydration rate or the total acid value in order to explain it to the customers.

change the specification by explaining that it was enough to set only the purity as the standard requirement, not the dehydration ratio and the total acid value. Therefore, as a result of this consideration, the First Team decided to ask the UBR Laboratory's Chemical Analysis Team to conduct analysis for the verification as to whether a correlation exists between the purity and the dehydration rate or the total acid value.

However, the First Team did not take specific measures such as examining and verifying the analysis results as well as explaining them to the customer. The then First Team leader gave the following reasons for the absence of actions. The main products then subject to analysis tests by the UBR Laboratory's Chemical Analysis Team, other than the only exception of s-BPDA, were under the responsibility of the Chemical Products Team. Therefore, when the Ube Chemical Factory contacted the Chemical Analysis Team, the usual contact point was the Chemical Products Team, and the jobs related to specific tests, including the above correlation verification, was also simply entrusted to the Analysis Team. Consequently, there was little sense of ownership in the First Team in responsibility for s-BPDA quality assurance operations, and thus an analysis request was made but specific verification work was not conducted.

Furthermore, in the above meeting, the Chemical Products Team explained to the UBR Laboratory's Chemical Analysis Team that a correlation exists between purity and the dehydration rate and total acid values. The analysis team was instructed from then on to reuse the purity test results, rounded to one decimal place, as the test results for the dehydration rate and total acid value.

(d) Situation in 2016

In April 2016, the then the General Manager of the Ube Chemical Factory instructed the leader of the Factory Quality Assurance Group 2 to check for any improprieties or other problems concerning testing conducted throughout the entire factory. The group leader instructed each team leader of the Second Group that he supervised to make the relevant checks.

In June of that year, the group leader recognized that s-BPDA was not being tested in accordance with the test procedures and that the purity test results were being reused. He reported to the General Manager of the Factory, the then Business Unit Director, and the Sales Group leader at the time. In response, the Factory Manager and others ordered the leader of Quality Assurance Group 2 to rectify the improprieties.

Therefore, from June 2016 onwards, tests were also conducted for the dehydration rate and total acid value, but the test records still contained values taken from the purity test results. The group leader stated that the reason for this was that if actual values were shown in the test records, sudden changes in the values would occur and the customers would realize that testing had not been carried out before. The group leader also mentioned that since the dehydration ratio and the total acid value are usually not tested for the product, there was a belief that overall product quality would have no problem unless there were problems with purity. He also said that there were in fact no complaints about quality from the customer, leading to a lax attitude of overconfidence towards quality.

Since the purity test results were reused for the dehydration rate and total acid value to be shown in the test record, the group leader had analysis carried out in September the same year to ascertain the correlation between purity, dehydration ratio and total acid number, but no correlation could be confirmed. Therefore, the group leader thought that the matter should be rectified by having Sales change the specifications with specific customers who request the dehydration ratio and total acid value as standard requirements. However, ultimately, no explanations were made to the customer and no changes were made in the specifications.

The group leader says that the reason for this was that the largest consumer of s-BPDA was the Ube Chemical Factory, which used it as a raw material for polyimide, and there were no quality problems at the factory. In addition, as the group leader says, although changes in specifications is the responsibility of Quality Assurance, they tried to leave the matter to the sales personnel who would usually act as contact points with each customer for specification changes, and they were also already swamped dealing with every-day customer service.

After that, in November 2017, the improprieties were discovered as a result of the internal investigation.

c. Recognition of parties involved

(a) Actors

The improprieties under review were perpetrated by staff in the UBR Chemical Analysis Team from 2003 at the latest to April 2018. Although the testers reported the problem of non-performance of tests to the Factory's Quality Assurance Group from whom they receive test requests, the Group did not give specific instructions for improvements such as using actually measured values. Consequently, they recognized that they had no options other than reusing the purity test results as previously directed by the Group.

(b) Those who noticed improprieties

As mentioned in b. (b) above, in 2011 at the latest, the testers of the UBR Chemical Analysis Team were aware of the inappropriate conduct, as was the Deputy Supervisor and team leader of the Analysis Team, and the staff and team leader of the Factory's Chemical Products Team. As mentioned in b. (c) above, the director of the UBR Scientific Analysis Laboratory and the team leader responsible for s-BPDA quality assurance operations were aware of the inappropriate conduct in 2013 at the latest. Furthermore, as in b. (d) above, at the latest in June 2016, the leader of the Factory's Quality Assurance Group 2 reported to the then General Manager of the Ube Chemical Factory and other managers, so they were aware of these improprieties. Although the improprieties were recognized in June 2016 at the latest, they could not be rectified until the Investigation was initiated. With regard to the reason for this negligence, the Factory General Manager said that since the quality of the product was substantially guaranteed, it was not considered to be a serious problem at the time, and that in retrospect, it was lax to continue to provide customers with test records showing fictitious test values while recognizing the fact.

d. Response after discovery of improprieties

After the improprieties came to light through the In-house Investigation conducted in November 2017, the Factory Quality Assurance Group requested the UBR Laboratory Chemical Analysis Team to carry out testing of the dehydration rate and total acid value in accordance with the designated test procedures in order to determine whether it was possible to continue the tests thoroughly based on the test procedures.[44] As a result, on January 11, 2018, determining that it was possible to carry out testing, the Quality Assurance Group instructed the Analysis Team to test the dehydration rate and total acid value in the future in accordance with the designated procedures for manufactured products.

However, it was considered difficult to provide a reasonable explanation concerning the non-performance of the tests of the dehydration rate and the total acid value to two specific customers whose specifications included this requirement, since sufficient test results had not been obtained. Furthermore, there was a concern that the two customers would notice from the sudden value changes that testing had not been carried out, if the actually measured values were shown in the test record immediately. Consequently, it was decided to continue to reuse the purity test results on the test record just as before.

After that, the Quality Assurance Group thought that it was possible to inform the two customers concerned of the fact because of having obtained test results for a certain period of time. Therefore, on April 19, 2017, it was explained to the two companies concerned that measured values for the dehydration rate and total acid had not been shown and instead, the test results of purity had been reused, and that in the future, actually measured values would be shown on the test record based on tests to be conducted in accordance with the designated specifications.

5. High-purity Chemicals

(1) Outline of improprieties and products involved

High-purity nitric acid and high-purity aqueous ammonia (or ammonia water) (hereinafter both are collectively referrd to as, “High-purity Chemicals”) are chemicals used as cleaning agents for silicon wafers, which are materials for manufacturing semiconductor devices.

The improprieties concerning High-purity Chemicals involved using a test method that differed from the method shown in the specifications for the particle test,[45] issuing test records as if specification-based testing had been conducted, and shipping the product.

(2) Regular work flow

The quality assurance operations for High-purity Chemicals are handled by the Fine and High-purity Chemicals Team, Fine Chemicals Quality Assurance Group, Specialty Products and Fine Chemicals Manufacturing Department of the Ube Chemical Factory (hereinafter, “High-purity Team”), and this team is supposed to prepare and agree with customers on the specifications that included specific test items.

44 There was a concern about obtaining stable, correct test results of the dehydration rate and total acid value ratio. Therefore, it is probable that this request for testing was made as a preliminary step before making a formal business request.
45 The particle test is a test to measure the amount of particles (foreign matter) contained in a sample.

The test requirements for High-purity Chemicals include the content, appearance, ignition residue, metal contents etc., which are regarded as the standard requirements in the specifications agreed to with the customer. Product inspections for High-purity Chemicals must be conducted by the testers of the UBR Laboratory Chemical Analysis Team in accordance with test requests made by the High-purity Team.

The High-purity Team must confirm the results of the tests conducted by the testers in a system called "Compact Eye" and issue a test record.

The particle test can be conducted either in a direct microscopy method[46] or a particle counter method.[47] The test method to be used is specified in the specification agreed to with each customer, so it is necessary to check the specifications for each customer and confirm the appropriate test method.

(3) Details of improprieties

a. Aspects of improprieties

Normally, as described in (2) above, it was necessary to conduct particle tests using either the direct microscopy method or the particle counter method according to the specifications agreed on with customers.

However, UBR had conducted particle testing by the particle counter method only since 2001 at the latest, and measurement in the direct microscopic method was not carried out.

Furthermore, the employee of the High-purity Team responsible for issuing test records was aware that particle testing was performed exclusively using the particle counter method at UBR. Nonetheless, he multiplied the test results obtained from the particle counter method by a certain coefficient[48] to get the figure corresponding to the direct microscopy method, issued test records showing such figures, and shipped the products.

b. Start of improprieties and ongoing status

Details concerning the start of the improprieties and the subsequent circumstances cannot be clarified due to the retirement of the employees then responsible for issuing test records in the High-purity Team. However, the current tester of the UBR Laboratory Chemical Analysis Team, who was responsible for particle testing since 2001, stated that they did not have any testing equipment for conducting the direct microscopic method from that time and did not have any experience of testing with that method. Thus, it can be understood that the test was conducted using the particle counter method only, not the direct microscopy method, in the same year at the latest.

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46 Direct microscopy method is a method of collecting particles contained in a sample with a thin film filter and then measuring the number of particles of diameter of 0.2 μm or more by means of a microscope.

47 The particle counter method is a method of measuring the amount of particles using a measuring instrument called a particle counter. By shining light on the sample, and converting scattered light emitted when a particle passes through light into an electric signal, the particle counter measures particle size and the number of particles.

48 The system had the function to automatically multiply the particle counter method result by the coefficient, when measurement by the direct microscopic method is specified in the specification.

In addition, the tester stated that test results of the particle counter method could generally be less influenced by the tester than those of the direct microscopy method and were highly accurate while the test method was simple. So, it is also undeniable that such understanding may have contributed to the continued improprieties.

c. Recognition of parties involved

(a) Actors

The employee of the High-purity Team responsible for issuing test records was aware that the tester at UBR Scientific Analysis Laboratory's Chemical Analysis Team performed particle testing using the particle counter method only and did not use the direct microscopy method. Nonetheless, he multiplied the test results of the particle counter method by a certain coefficient for High-purity Chemicals for specific customers whose specifications called for particle testing in the direct microscopy method, issued test records, and shipped the products.

On the other hand, the tester said that he conducted the tests exclusively with the particle counter method without being aware of the existence of customers whose specifications required the direct microscopic method examination. Therefore, it has not been confirmed that they carried out the particle counter method tests while recognizing it as an inappropriate conduct.

(b) Those who noticed improprieties

It is recognized that the High-purity Team leader who is the superior of the employee responsible for issuing test records was aware that the improprieties existed because of the understanding that the direct microscopy method test results were shown on the test record.

It has not been confirmed that there are any facts that suggest that Ube Industries executives were involved in this matter or that they did not take corrective measures while being aware of it.

d. Response after discovery of improprieties

At the time of the In-house Investigation, the UBR Laboratory's Chemical Analysis Team contracted to perform tests had no testing equipment for the direct microscopy method. So, the High-purity Team leader obtained the equipment necessary for this method and performed tests by himself using the direct microscopy method. Comparing the test results of the direct microscopy method and those obtained by multiplying the particle counter method test results by a predetermined coefficient, the leader confirmed that the use of the coefficient was appropriate.

Currently, showing these test results to specific customers whose specifications call for the direct microscopy method, Ube Industries is proposing to make changes to their specifications.

6. Coal

(1) Outline of improprieties and products involved

Ube Industries imports and sells coal from all over the world, including Australia and Indonesia, and also provides tests of coal and other services by external contract.

The Coal Testing Laboratory of Ube Industries, Ltd. (hereinafter, "Coal Testing Laboratory") undertakes this testing job and receives instructions from the specific customers that contract the testing of coal. The Coal Testing Laboratory committed improprieties, such as fabricating and altering test results and issuing test records for the coal requested by a specific customer. These improprieties were conducted receiving instructions from the customers concerned.

(2) Regular work flow

a. Test items

In response to customer requests, the Coal Testing Laboratory conducts testing of the samples provided.

The main test items for coal are industrial analysis (moisture, ash, volatile components, fixed carbon) and element analysis (carbon, hydrogen, oxygen, nitrogen, combustible sulfur, total sulfur), and specific test items are determined in the contract agreed to with each customer.

b. Issue of a test record

Except for some tests,[49] the results of tests conducted at the Coal Testing Laboratory are automatically transferred to the system, and a test record is prepared in the Excel file format.

The employee responsible for issuing test records at the Coal Testing Laboratory is supposed to print out the test records prepared in an Excel file form and provide it to the customer after being approved by the director of the Coal Testing Laboratory.

(3) Details of improprieties

a. Aspects of improprieties

The improprieties at the Coal Testing Laboratory involved the employee responsible for issuing test records carrying out the tests based on a request from a specific customer. After once delivering the test record with actual test results, the employee received instructions from the customer who received the test record and fabricated test results for total sulfur, which was not tested using a designated value. The employee also altered the test results for moisture, ash content, and volatile components, which were actually tested. Thus, an official test record was issued after the above fabrications, and it was given to the customer concerned.

b. Start of improprieties and ongoing status

49 Total moisture and particle size distribution are tested by manual procedures and require the additional task of entering test results.

In 1999, the employee responsible for issuing test records in the Coal Testing Laboratory received instructions from a specific customer[50] for the fabrication and alteration of item a. above. When he consulted with the employee responsible for sales at that time, he received a reply that the sales employee would like him to respond in accordance with the request. Consequently, the employee responsible for issuing test records continuously fabricated and altered results on instructions from the customer from June of 1999 to when he retired in December 2017.

c. Recognition of parties involved

(a) Actors

As in item a. above, the employee responsible for issuing test records at the Coal Testing Laboratory received instructions from the specific customer and fabricated test results for total sulfur, which was not tested, using a designated value, as well as altered the test results for moisture, ash content, and volatile components, which were tested, and issued the test result as an official test record.

(b) Those who noticed improprieties

As in item b. above, the sales employee consulted by the employee responsible for issuing test records in the Coal Testing Laboratory was aware of the improprieties.

However, it has not been established as fact that the employee responsible for issuing test records or the employee responsible for sales consulted the director of the Coal Testing Laboratory or Ube Industries executives concerning the instruction from the customer to fabricate and alter results.

Also, as mentioned in (2) b. above, the director of the Testing Laboratory, who was in a position to approve the test records, said that he did not actually compare the test results in the test records and those in the system, but only checked for particularly unnatural aspects in the written test records, so he did not notice fabrication or alteration of test records. Therefore, it cannot be established that he was aware of the specific facts of fabrication and alteration.

d. Response after discovery of improprieties

The employee responsible for issuing test records at the Coal Testing Laboratory retired from Ube Industries in December 2017. His successor received similar instructions from the customer, so he reported the instructions to his superior, the director of the Coal Testing Laboratory, which made the improprieties obvious. After receiving the report, the director of the Testing Laboratory immediately informed the customer that fabrication and alteration would never be made any more, and thereafter there were no such instructions coming from the customer.

Furthermore, the director of the Testing Laboratory currently issues test records after comparing the issued test records with the test results recorded in the system.

50 The customer engages in the business of processing and sales of coal to third parties and states that the purpose of requesting fabrication and alteration was to make the product look to have even a little bit better quality.

II. Ube Material Industries, Ltd.

1. Introduction

Ube Material Industries, Ltd. (hereinafter referred to as "Ube Material") is a corporation formed in 1997 by the merger of Ube Chemical Industries Co., Ltd. and CALCEED Co., Ltd. The Ube Plant of Ube Material (hereinafter "the Ube Plant") manufactures products handled by the Magnesium Division, while the Mine Plant (hereinafter "the Mine Plant") and Chiba Plant (hereinafter "the Chiba Plant") of the company manufacture the products for which the Calcium (Lime) Division is responsible.

Among the products manufactured by this company, the products pertaining to the improprieties discovered by The Investigation are as follows (hereinafter the products handled by the Fine Material Division are referred to as "Fine Products," and those by the Calcia Division as "Calcia products").

Plant	Handled by	Products
Chiba Plant	Fine Material Division	Hydroxyapatite Calcium carbonate as food additives Magnesium oxide as food additives Ultra-high-purity calcium carbonate as food additives
	Calcia Division	Quicklime Slaked lime Calcium carbonate Dustproof solidification material Soil conditioner Limestone aggregate
Mine Plant	Calcia Division	Quicklime

2. Fine Products

(1) Outline of improprieties and products involved

a. Products

(a) Hydroxyapatite (HAP)

Hydroxyapatite (hereinafter "HAP") is a type of calcium phosphate compound produced by emulsifying slaked lime, combining it with phosphoric acid, and after drying and pulverization, returning it to a slurry.[51] Since it has excellent biocompatibility with the main components of bones and teeth, it is mainly used as a raw material for biomaterials and dentifrices.

The Chiba Plant started manufacture and sale of HAP before the merger in 1996, and its main buyers are two companies engaged in the manufacture and distribution of medicated dentifrice. Furthermore, Ube Material purchases some of the finished medicated dentifrice products from these companies to sell to consumers and others.

51 Slurry is a liquid substance.

(b) Calcium carbonate for food additives

Calcium carbonate as a food additive (hereinafter, "FA Calcium Carbonate") is produced by emulsifying slaked lime and combining it with carbon dioxide to generate calcium carbonate. It is a food additive manufactured through processes such as aging, dispersing and drying the generated calcium carbonate and is mainly used as a calcium enhancer for milk drinks.

The Chiba Plant has been manufacturing and selling calcium carbonate slurry since 1999, and since 2006 it has manufactured and sold the slurry after drying and pulverization as FA Calcium Carbonate, and the plant has only one specific customer for this product.

(c) Magnesium oxide as a food additive

Magnesium oxide as a food additive (hereinafter "FA Magnesium Oxide") is a food additive produced at the Chiba Plant by iron removal, heat sterilization and sieving of magnesium oxide produced at the Ube Plant. It is mainly used as a magnesium enhancer in food and beverages.

The Chiba Plant started the manufacture and sale of FA Magnesium Oxide in 2004 and has only one specific customer for this product.

(d) Ultra-high-purity calcium carbonate as a food additive

Ultra-high-purity calcium carbonate as a food additive (hereinafter, "FA Ultra-high-purity Calcium Carbonate") is produced by chemically digesting quicklime by adding pure water, dissolving and filtering it, then combining it with carbon dioxide to produce calcium carbonate. It is a food additive manufactured through processes such as aging and drying the generated calcium carbonate and is mainly used as a calcium enhancer for food products.

The Chiba Plant started the manufacture and sales of FA Ultra-high-purity Calcium Carbonate before the merger in 1996, and its main buyers are food manufacturers.

b. Outline of improprieties

Improprieties occurred to the four Fine Products from (a) to (d) above (hereinafter, "the Four Fine Products"). The improprieties involved not actually conducting some tests required in the specifications agreed with specific customers in the Plant's process or product inspection, issuing test records showing arbitrary values, and shipping the product.

(2) Regular work flow

a. Quality inspections

At the Chiba Plant, the testers[52] of the group responsible for quality inspections (process inspection and product

52 In addition to the Office employees and temporary staff (employed from 1999 to 2008), section managers also conduct the test

inspection) of Fine Products (hereinafter "the Fine Group") in the Quality Management Office, Chiba Plant, are supposed to follow the prescribed procedures to conduct the tests required for each product.

Test results are either transferred automatically from the analyzer to the quality management system[53] or are manually entered by the tester into the system.

When all the necessary test results are put in the quality management system, the system will automatically determine whether to accept or reject the product by comparing the results with company standards and specifications. The General Manager of the Quality Management Office or the section manager must confirm the acceptance decision on the system and finalize the test results by approving them.[54]

More specifically, the "analysis detail" file of the quality management system has the columns "test requirement," "input value" and "replacement value" of the object product. For example, if the tester enters actual measurement values such as "0.03 (%)" or "99.0 (%)," or information such as "1," meaning that the test result satisfies the company standards and the specification, the system will compare them with the specification, and the "replacement value" field will automatically show the comparison results converted to, for example, "≤0.05," "99.0," "Pass," "Within limit," "○" (meaning OK, just like the ✓ mark), etc., and thus the acceptance decision is made.

Once the acceptance decision is made, the Quality Management Office will issue a test record from the quality management system in the name of the Quality Assurance Department section manager[55] upon receipt of the request from Production Section 2 and send it to the Section.[56] This section will ship the product with the test record attached.

Before the quality management system was introduced in April 2014, the test results and the test record were recorded and managed in separate Excel files on a shared server and were not linked to each other.

b Test requirements

(a) HAP

The Law on Securing Quality, Efficacy and Safety of Products Including Pharmaceuticals and Medical devices (Act No. 145 of 1960, including subsequent amendments) regulates that manufacturers of medicated dentifrice that is a quasi-drug manufacture the products using raw materials conforming to the Japanese Standards of Quasi-Drug

operations sometimes.

53 This system was introduced in the Ube, Mine and Chiba plants in 2014 to centrally control the testing and issue test records.

54 Product showing a non-acceptable value in product inspection will be retested. If repeating an outlier value, it will be deemed as nonconforming. It will then be handled in one of the following ways: i) used as product raw material, ii) re-rated, iii) disposed of, iv) specially accepted based on waiver adoption regulations, or v) returned to the previous process for treatment.

55 The section manager of the Quality Assurance Department in the Production & Engineering Division concurrently serves as the General Manager of the Quality Management Office.

56 At the Chiba Plant, the task of issuing test records is handled exclusively by employees of the Quality Management Office responsible for general administration.

Ingredients (hereinafter "Quasi-Drug Standards").

In this regard, HAP, which is a raw material for medicated dentifrice, is not directly subject to the Quasi-Drug Standards. However, due to a contract with the medicated dentifrice manufacture, the Chiba Plant is obligated to supply HAP conforming to the standards.

The main test requirements for HAP are identification tests (for calcium and phosphorus), purity test (for acid insoluble matter, chloride, sulfate, carbonate, heavy metals, arsenic and barium salt), physical property test (for pH and XRD testing), content, microorganism test and others.

The Quasi-Drug Standards permit the use of a test method that has accuracy and precision equal to or higher than the prescribed test method. So, the Fine Group conducts all testing for heavy metals, arsenic and barium salts using an ICP analyzer[57] (hereinafter, "ICP Analysis"), which the group judged to be more accurate and precise than the prescribed test method.

(b) FA Calcium Carbonate

The Food Sanitation Act (Act No. 233 of 1947, including subsequent amendments) stipulates that FA Calcium Carbonate conform to criteria listed in the Japan Specifications for Food Additives (hereinafter, "JSFA").

The main test requirements for FA Calcium Carbonate include identification tests (for acetic acid foaming and dissolution, and calcium salt), purity test (for heavy metals, arsenic, hydrochloric acid insoluble matter and free alkali), sensory test (for appearance and foreign matter), and physical property test (particle size distribution and pH), microbial testing.

Among the above test items, the identification purity tests are process inspections of the calcium carbonate in its slurry state, while the sensory, physical property, and microbial tests are product inspections.

Of these, both heavy metals and arsenic are subject to ICP Analysis for the same reason as (a) above.

(c) FA Magnesium Oxide

FA Magnesium Oxide also must conform to the JSFA in (b) above. The main test requirements consist of identification tests (for magnesium salt), purity test (for water soluble matter, hydrochloric acid insoluble matter, free alkali, heavy metals, calcium oxide, and arsenic), particle size, content, microbial test and the like.

(d) FA Ultra-high-purity Calcium Carbonate

FA Ultra-high-purity Calcium Carbonate must conform to the JSFA in (b) above. The main test requirements include identification test (for acetic acid foaming and dissolution, and calcium salt), purity test (for hydrochloric

57 ICP stands for Inductively Coupled Plasma.

acid insoluble residue, free alkali, heavy metals, arsenic, and barium), content, and microbial test.

Of these, heavy metals and arsenic are both subject to ICP Analysis for the same reason as (a) above.

(3) Details of improprieties

a. Aspects of improprieties

As described in (2) above, it is necessary to conduct all the tests required in the customer-agreed specification and enter the test results in the quality management system to issue a test record.

However, the Fine Team testers did not conduct some tests required for Four Fine Products in the specifications agreed to with customers. Instead, as described below, they entered arbitrary test results in the quality management system and issued test records that were prepared in the system using the entered information.

More specifically, for the test items that were not actually conducted, the testers made the following entries in the "Input value" field of the "Analysis details" file of the quality management system: (1) concerning "Content," any numerical value that is greater than or equal to the required level, in reference to actually measured past values; (2) for "Hydrochloric acid insoluble matter," any value that is lower than or equal to the required level, in reference to actually measures past values; (3) "1" for test requirements where "1" means level satisfied;[58] (4) for other test items for determining whether or not a specific component is below the reference value,[59] the maximum value permitted in the standards.[60,61]

The items and details of the tests not carried out for the Four Fine Products are as follows:

(a) HAP

Test items	Details
Identification test (calcium)	Presence of calcium
Identification test (phosphorus)	Presence of phosphorus
XRD analysis	Presence of HAP crystal structure
Sulfate	Sulfate content
Chloride	Chloride content
Arsenic	Arsenic content
Heavy metal (lead)	Heavy metal content (lead)
Barium salt	Barium salt content

58 Identification test, XRD analysis, purity test (heavy metals, arsenic, barium salt, and free alkali) and particle size.
59 Sulfate and chloride.
60 Prior to the introduction of the quality management system in 2014, similarly, an arbitrary value or stamping "Pass" was put beforehand in a printed quality register for all the test items that had not been conducted, and also an arbitrary value was entered in the daily inspection report and the test records on the Excel file on the shared server.
61 After entering values, the tester actually performed the necessary tests only for the remaining test item whose "Input value" field was left blank, thus completing the "Input value" input to all the test requirements.

On March 5, 2018, the Chiba Plant received an indication from a customer that the sulfate value had not met the specifications during the customer's HAP acceptance test, so the preserved samples of the corresponding shipment lot and products in the inventory were tested. Many tested samples showed sulfate values that were out of the standard of the specification agreed to with the customer.

(b) FA Calcium Carbonate

Test items	Details[62]
Identification test (acetic acid foaming and dissolution)	Presence of carbon dioxide gas
Identification test (calcium salt)	Presence of calcium salt
Content	Calcium carbonate content
Free alkali	Alkali content
Hydrochloric acid insoluble matter	Amount of residual substances on dissolution with hydrochloric acid
Arsenic	Arsenic content
Heavy metal (lead)	Heavy metal content (lead)

(c) FA Magnesium Oxide

Test items	Details
Identification test (magnesium salt)	Presence of magnesium salt
Free alkali	Alkali content
Particle size (laser diffraction particle size distribution measurement)	Content of particles of 8 μm or more

(d) Ultra-high-purity Calcium Carbonate

Test items	Details
Identification test (acetic acid foaming and dissolution)	Presence of carbon dioxide gas
Identification test (calcium salt)	Presence of calcium salt
Content	Calcium carbonate content
Free alkali	Alkali content
Arsenic	Arsenic content
Heavy metal (lead)	Heavy metal content (lead)

b. Circumstances behind start of improprieties and ongoing status

62 The test record had no fields to enter individual test results for content, free alkali, and hydrochloric acid insoluble matter of FA Calcium Carbonate, but a collective remark "Passed the JSFA standards" was entered in the remarks field.

(a) Background situation

In 1996, the Chiba Plant started the manufacture and sales of new products, including food additives based on limestone proprietary technology, such as HAP and FA Ultra-high-purity Calcium Carbonate.

At that time, the Fine Group had two testers only, including the current General Manager of the Quality Management Office. According to the then testers, the workload was so excessive that they had to work overtime very often. When one took employee leave, the other one on duty could not even take a break.

In addition, the analysis laboratory of Fine Products had the ground floor mainly for ICP Analysis and the upstairs mainly for physical property and microbial testing, and the testers found coming and going in the office building very troublesome.

Thereafter, as in (1) a (b) and (c) above, the production of calcium carbonate slurry started in 1999, that of FA Magnesium Oxide began in 2004, and in 2006 calcium carbonate slurry was switched to FA Calcium Carbonate. Thus, the handled products increased in number and, as they were all food additives, it was required to add microbial tests. For that reason, temporary staff were hired from 1999, and after that, the total number of regular-employee and temporary staff testers reached about five in the Fine Group. In 2008, there was a maximum of eight people. In spite of this, the amount and type of the testing increased and the deadlines of some products became more pressing, so the testers at that time said that the workload was still excessive just as before. Temporary worker testers were mainly engaged in microbial testing and ICP Analysis for heavy metals, arsenic, etc.

In 2009, due to amendment of the Act for Securing the Proper Operation of Worker Dispatching Undertakings and Improved Working Conditions for Dispatched Workers (Law No. 88 of 1985, including subsequent amendments), it became impossible to enter into a temporary staff contract of validity longer than three years in one department, so the temporary staff contracts were terminated, leaving a total of four testers in the Fine Group.

b. Start of improprieties and ongoing status

Under the circumstances described in (a) above, the improprieties involving the Four Fine Products started sometime from 1996 to 2009, as detailed below. The current General Manager of the Quality Management Office stated that the improprieties of the Four Fine Products continued until March 15, 2018, when the improprieties were revealed.[63] The situation concerning the ICP Analysis of HAP, FA Calcium Carbonate and FA Ultra-high Purity Calcium Carbonate is as shown in e below.

a HAP

Sometime between 1996 at the start of HAP production and the first half of the 2000s, the Fine Group testers considered that, from the fact that HAP was manufactured by combining slaked lime (calcium hydroxide) and

63 The improprieties involving FA Ultra-high-purity Calcium Carbonate were discovered on April 12, 2018, and the first product test after March 15 was conducted on April 24, in which all the test requirements were checked. Therefore, no improprieties related to the product were committed from March 15, 2018 onwards.

phosphoric acid, it would naturally contain calcium and phosphorus, and that, together with experience of past testing, there was no doubt that it would pass the identification test of calcium and phosphorus. Therefore, they decided to omit these tests, in order to reduce the workload.

When or slightly after these identification tests were omitted, the testers considered that the product would also pass the sulfate and chloride tests based on testing experience to date. Therefore, in order to alleviate the workload, they gradually decreased the frequency of these tests, and eventually ceased these tests entirely.

At the same time, the testers believed that the product would also pass the XRD analysis, again based on past testing, while it was annoying that the XRD analyzer was installed in a separate building more than a 100 meters away from the Fine Product analysis laboratory. Therefore, in order to reduce the workload, they gradually decreased the frequency of the analysis, which normally should have been conducted for all production lots[64] and eventually stopped the tests entirely.

At that time, the testers recognized that the XRD analysis was required in the specification. Until it was added to the test requirements in the specification for a specific major customer at the 2016 specification revision, however, it was a test item arbitrarily conducted at the Chiba Plant, not a test requirement in the specification.

In 2016, the General Manager of the Quality Management Office recognized that XRD analysis was added to the test requirements due to revision of the specifications, thereby making the analysis a contractual test requirement. However, after conducting the analysis two times following the specification revision, no more tests were conducted until the improprieties involving HAP were revealed. As for the reasons for this omission, the General Manager mentioned: i) that he believed the product would definitely meet the standard in the specification, and ii) that he felt hesitant to tell the subordinate section manager or the Quality Assurance Office staff to conduct new analysis, because of the concern about workload increase after the number of process inspections increased due to the addition of drying and reslurry[65] processes to the HAP manufacturing under the guidance of a government agency.

b FA Ultra-high-purity Calcium Carbonate

Sometime between 1996 at the start of FA Ultra-high-purity Calcium Carbonate production and the first half of the 2000s, the testers in the Fine Group considered that, from the fact that this product was manufactured by combining a calcium solution made from quicklime (calcium oxide) as a raw material and carbon dioxide, it would naturally be possible to detect acetic acid foaming and calcium salt, and that, together with their experience of past testing, there was no doubt that it would pass the identification test of foaming and dissolution. Also, the testers thought that, from the fact that there was no possibility of alkali remaining or contamination in the manufacturing process, together with their experience of past testing, there was no doubt that it would pass the free alkali test. Therefore,

64 The monthly average production performance was 5 or 6 lots at that time.
65 Process of returning the material to a slurry (liquid substance).

the testers decided to omit the alkali test in order to reduce the workload.

Slightly after the identification tests and free alkali tests were omitted, the testers believed that since the product was manufactured with a very high purity, the product would also pass the content tests. Therefore, in order to reduce the workload, they gradually decreased the frequency of the tests and eventually stopped the tests, except for occasional testing to be conducted for reconfirmation purposes.

In addition, the testers mentioned that they asked a public agency to conduct food additive tests for this product twice a year, and that it passed all the tests conducted.

c FA Calcium Carbonate

The Chiba Plant has been manufacturing and selling calcium carbonate slurry[66] as a product since 1966. However, right after the production start, the testers in the Fine Group considered that, from the fact that FA Calcium Carbonate was manufactured by combining slaked lime (calcium hydroxide) and carbon dioxide, it would naturally be possible to detect acetic acid foam and calcium, and therefore, together with their past testing experience, there was no doubt that it would pass the identification test of foaming and dissolution, and the testing was ceased.

When or slightly after the identification tests were omitted, the testers thought that, since they confirmed a very low impurity level at acceptance inspection of the raw material (calcium hydroxide), the product would also pass the content test and hydrochloric acid insoluble matter test, which were indicators of purity. Also, they stopped the free alkali tests to reduce the workload, because they thought there was no doubt that it would pass the tests for the following reasons: i) a sufficient amount of carbon dioxide was pumped for the manufacture in order not to leave any alkaline component; ii) the specific conductance test confirmed that no calcium hydroxide remained; and iii) they had had past testing experience to support these points.

Since 2006 onward, FA Calcium Carbonate has been produced instead of calcium carbonate slurry. So, calcium carbonate slurry has been formed during the production of FA Calcium Carbonate, but since then the slurry has remained without undergoing any of the above tests during the process inspection.

d FA Magnesium Oxide

In 2004, the production of FA Magnesium Oxide began at the Chiba Plant. However, around one year after the start of manufacturing, the Fine Group testers decided that there would be no problem with omitting the identification test and free alkali test, since these tests were not conducted any more for other products, and in order to reduce the workload, they stopped conducting these tests.

On the other hand, it was stipulated in the specifications agreed with the customers that the particle size test must be conducted in both laser diffraction particle size distribution measurement and the 100-mesh water sieve test.

66 Currently it is formed during the course of the manufacturing process of FA Calcium Carbonate.

However, the Fine Group testers overlooked that the former measurement was a test requirement, so this measurement was not conducted from the beginning of 2004 when manufacturing started.

e ICP Analysis

According to the Fine Group testers, the ICP Analysis of HAP and FA Ultra-high-purity Calcium Carbonate was stopped some time during the period from 2000 to 2009, when the task was handed over from the temporary staff who were previously responsible for the testing. However, it is not possible to clarify details concerning the start of the improprieties and the circumstances. Also, it appears that ICP Analysis of Ultra-high-purity Calcium Carbonate was restarted on the instructions of the then section manager, before the current General Manager of the Quality Management Office resumed his position as General Manager, Quality Management Office of the Chiba Plant from his previous office, as the General Manager, Quality Management Office of the Mine Plant in April 2015. Testing has been conducted since the time that the instruction was given.

The non-performance of the ICP Analysis of FA Calcium Carbonate started sometime between 2000 and around 2009. However, details concerning the start of the improprieties and other circumstances cannot be clarified.

The current General Manager of the Quality Management Office stated that he had a slight feeling of non-performance of ICP Analysis of HAP and FA Calcium Carbonate, but that he did not choose to accurately grasp the situation or rectify it because ICP Analysis was being arbitrarily conducted as part of acceptance testing of slaked lime as a raw material.

c. Recognition of parties involved

(a) Actors

As in (3) a above, the successive testers of the Fine Group (including the section managers who were in charge of the testing) entered arbitrary values in the Quality Management System despite not actually conducting the tests, and so are naturally the persons involved in the improprieties.[67]

The information on what tests were not to be conducted was handed over from predecessor testers to successors. According to Fine Group testers, there were cases in which the predecessor indicated such tests explicitly showing a memo stating, “No need (to do this test),” as well as cases in which they noticed that test results were shown in the daily inspection report and the quality management system although they did not receive explanation on the test methods, and they did not actually conduct the tests either, from which they understood implicitly that those tests were not to be conducted.

As for the particle size test by laser diffraction particle size distribution measurement of FA Magnesium Oxide, as mentioned in b. (b)-d above, it cannot be determined that the testers of the Fine Group intentionally omitted these

67 The testers of the Fine Group who were mainly responsible for ICP Analysis stated that they did not know that tests of the products that they did not perform were not conducted at all.

tests since all the Group employees had overlooked the fact that they were test requirements.

(b) Those who noticed improprieties

The current General Manager of the Quality Management Office said in the hearing that, as a tester in the Fine Group, he asked the then General Manager of the Office if it was OK to do without the tests, when considering to omit test items required in the specification. Then, the General Manager gave his approval, saying "Since they would pass anyway, let's omit them." On the contrary, among the successive General Managers up to the time when the improprieties were revealed, one who is still at Ube Material and another one who is retired deny these facts, and a third person who is retired is refusing to appear at an interview, while there are no other materials suggesting the above facts. Therefore, it cannot be confirmed that the successive General Managers of the Quality Management Office, other than the current General Manager, were all aware of the improprieties.

Other employees who may have engaged in the process inspection or product inspection in the Fine Group include those responsible for issuing test records, General Managers and deputy General Managers of the Plant, and those working at the Quality Assurance Department of the Production & Engineering Division. However, since none of them affirmed they were aware of the improprieties and no material was found to indicate that they noticed them, it cannot be confirmed that they were aware of the improprieties. The circumstances that permit the inference that they were unaware of the improprieties are as follows.

a Persons responsible for issuing test records

When issuing a test record, the spaces "Input values" and "Replacement values" are filled with data for all the test requirements and confirmed in the Quality Management System without omission, so the employees responsible for issuing test records have no contact with the situation of entering fictitious values. Also, communication between the Fine Group and the employees responsible for issuing test records is limited because they are working in different buildings.

b General Manager and deputy General Manager of Plant

The successive testers of the Fine Group, who were the actors as described in (a) above, stated that they did not report to the General Manager or deputy General Manager of the Plant.

c Personnel of Quality Assurance Department, Production & Engineering Division

Employees of the Quality Assurance Department, Production & Engineering Division (except for those serving concurrently as General Manager of the Quality Management Office), work at the Ube Plant, so they are not in a position to receive reports, both in terms of organizational structure or division of duties chart, to directly receive reports on issues pertaining to quality testing by the Quality Management Office.

d. Response after discovery of improprieties

(a) Inspection status

The current General Manager of the Quality Management Office and the testers of the Office's Fine Group affirmed that the General Managers of the Production & Technology Division, Quality Assurance Department, and Quality Management Office have given instructions that testers must perform all the test requirements, and that the testers are currently conducting testing for all the test requirements. Since the sulfate value of HAP did not meet the standards of specifications agreed upon with the customers as described in a. (a) above, an external analysis agency was requested to conduct testing, and their test results should be used for the final acceptance decision for the time being until the causes are determined and rectification measures are finalized.

Identification tests and other visual observation items do not record specific numerical values in the test results, so the test conditions may remain unclear. So, beginning with tests conducted on April 5, 2018, such tests will be recorded photographically.

Furthermore, according to the current General Manager of the Quality Management Office and testers, efforts are being made to solve the problem of examination personnel shortage, for example, by making the employee responsible for the Office's clerical work related to ISO 9001 a tester in the Fine Group, after the discovery of improprieties involving HAP in March 2018. They still say, however, the test workload has increased from before forcing more overtime hours, since all the test requirements of all products are now to be tested, as mentioned above,

(b) Response to customers

Information has been given to customers to the effect that preserved samples of FA Calcium Carbonate, FA Magnesium Oxide and FA Ultra-high-purity Calcium Carbonate passed the tests conducted.

(c) Voluntary recall of medicated dentifrice made from HAP

On April 5, 2018, Ube Material and its customer who purchases HAP and manufactures and sells medicated dentifrice from it visited the competent authority and reported that a voluntary recall of the medicated dentifrice would begin on April 9.

(d) Changes in HAP drying process and raw materials

According to the testers of the Fine Group, possible causes of the non-conformance of the HAP sulfate to the customer-agreed standards were i) that sulfur oxide put in the gas for gas leak detection was mixed in HAP during the drying process (direct heating) contracted to outside contractors starting in May 2016, or ii) HAP raw materials purchased from a specific supplier after February 2001 had a problem. Consequently, Ube Material has decided to use its own electric heating dryer that does not use gas for the drying process and has also changed the suppliers of raw materials. According to the testers, HAP manufactured after the above changes passed all the standards specified in the Japanese Standards of Quasi-Drug Ingredients in the outside contractor's tests.

3. Quicklime, Slaked Lime, Calcium Carbonate, and Dustproof Solidification Material (Chiba Plant)

(1) Outline of improprieties and products involved

The Chiba Plant produces Calcia Products such as quicklime, slaked lime, calcium carbonate, and dustproof solidification material using limestone (20 to 40 mm in diameter) extracted at the Isa Mine in Mine, Yamaguchi Prefecture and the Torigatayama Mine in Niyodogawa, Kochi Prefecture.

Quicklime, a product used for steel (flux, etc.), pig iron (raw material for sintering), soil stabilizer, desiccant, calcium processed products and other general chemical industry purposes, is produced by baking limestone in a Beckenbach annular shaft kiln. Quicklime comes as blocks or in powder form after milling.

Slaked lime is a product used as an acidic wastewater neutralizing agent, for treating harmful gases such as hydrogen chloride in exhaust, fertilizer, water and sewage treatment, soil stabilizer and other general industrial purposes. To produce slaked lime, the quicklime produced in the Plant is reacted with water in a slaked lime production facility. Then it is classified into grades and granulated.

Calcium carbonate is a product used for asphalt filler, for treating toxic gases such as sulfur oxide in exhaust, acidic wastewater neutralizer, fertilizer and other general chemical industry purposes. It is produced by pulverizing limestone to a particle size according to the application.

Dustproof solidification material is a product for reforming soft ground at civil engineering and construction sites, where measures against dust are required in consideration of the environment. It is made from main raw materials such as quicklime, cement, etc. and is a ground-improving material with lower dust generation due to the special surface treatment applied.

For these products, there were improprieties involving the issue of test records showing altered results when the results of tests conducted in pre-shipment inspection did not meet the standards in the customer-agreed specifications or company standards.

(2) Regular work flow

a. Test procedure, etc.

The test items for each product are prepared by the Quality Management Office, and finally determined by the specifications agreed to between customers and the Tokyo Sales Department of the Calcia Division, which is the responsible contact with customers. The following tests must be conducted by the testers (section manager or staff) of the group responsible for quality inspection (process inspection and product inspection) of Calcia Products (hereinafter, “the Calcia Group”) in the Quality Management Office.

(a) Quicklime

The testers of the Calcia Group must regularly collect samples from the quicklime baking process, conduct tests on

residual carbon dioxide, ignition loss, particle size, etc., and enter the test results in the daily inspection report.[68] Subsequently, the same tests must be conducted as pre-shipment product inspection before the product is loaded on a transport vehicle.

(b) Slaked lime

As with quicklime, the testers of the Calcia Group must collect samples of slaked lime, conduct tests on residual carbon dioxide, particle size, etc. and then conduct the same tests as product inspection before the product is loaded on a transport vehicle.

(c) Calcium carbonate

The testers of the Calcia Group have to collect samples of calcium carbonate, and conduct component analysis, and tests for particle size, moisture level etc.

(d) Dustproof solidification material

The testers of the Calcia Group must collect samples of products with dustproof functions, and conduct tests for dust generation, chemical composition, etc.[69]

b. Issue of a test record

In this company, the testers of the Calcia Group must enter test results for residual carbon dioxide, etc. in the Quality Management System,[70] and when the standards of the specifications are met, the General Manager of the Office or the section manager must approve the acceptance. After approval, the staff responsible for issuing test records in the Quality Management Office must issue a test record, and the product will be shipped. On the other hand, if the standards of the specification are not satisfied, approval will not be given, so the test record cannot be issued and the product will not be shipped.

(3) Details of improprieties

a. Aspects of improprieties

Normally, as in (2) b. above, if the standards of the specifications are not satisfied in the pre-shipment product inspection, it will not be possible to issue a test record, so the product cannot be shipped. However, the testers of the Calcia Group and the staff responsible for issuing test records, whether at the request of sales staff of the Sales Division or on their own judgment, added a fictitious grade (product) “For test record” in the Quality Management System for the following test items. After entering the real test results in the “Analysis details” of the grade, they altered the values to meet the specification-based standards, issued test records from the Quality Management System, and shipped the products that did not meet the standards of the specifications.[71]

68 The daily report is notified to the General Manager and deputy General Manager of the Plant, in addition to the General Manager of the Quality Management Office.

69 Tests are conducted concerning calcium oxide, magnesium oxide, silicon dioxide, aluminum oxide, ferric oxide, sulfur trioxide, residual carbon dioxide and ignition loss, as required in the specifications.

70 Some test results were automatically transmitted from the analyzer to the Quality Management System, but it was possible to change the values after input.

71 The staff states that the information on the act of value alteration in the above method was shared in the entire Quality

Normally, it was necessary to get the approval of the General Manager of the Quality Management Office or the section manager for the issue of test records. However, the testers (staff) of the Calcia Group and the employee responsible for issuing test records logged into the system using the ID and password of the approver on the Quality Management System, altered the values of individual products without obtaining the real approval of the General Manager or section manager, and issued test records. The General Manager of the Office and section manager were aware that the approver's ID and password were used and that the test record was issued with altered values, but they did not seek to stop the practice.

(a) Quicklime

When, in the product inspection, the residual carbon dioxide did not meet the company standard or the standards of the customer-agreed specifications or ignition loss, or the particle size of powdered products did not meet the standard of the specifications, the Calcia Group testers issued a test record listing arbitrary values that satisfied those standards and delivered the record to the customer, and the product was shipped.[72]

(b) Slaked lime

When, in the product inspection, the residual carbon dioxide or particle size did not meet the company standard or the standards of the customer-agreed specification, the Calcia Group testers issued a test record showing arbitrary values that satisfied the standards and delivered the record to the customer, and the product was shipped.

(c) Calcium carbonate

When, in the product inspection, the moisture of calcium carbonate 100-mesh products did not meet the standards of the customer-agreed specification (which were the same as the company standards), the Calcia Group testers issued a test record listing arbitrary values that satisfied the standards and delivered the record to the customer, and the products were shipped.

(d) Dustproof solidification material

Regarding some of the dustproof solidification material products, when, in the product inspection, the dust generation and chemical composition did not meet the standards of the customer-agreed specification, the Calcia Group testers issued a test record listing arbitrary values that satisfied the standards and delivered the record to the customer, and the product was shipped.

b. Start of improprieties and ongoing status

The Calcia Group testers state that the quality of each product depends significantly on the conditions of the kilns and other production facilities, the size of the limestone feedstock, differences in composition according to the quarrying, and the fuel properties, and that it often happens that the product does not meet the internal standards or

Management Office, including the General Manager, at the time of the Quality Management System introduction in 2014.

72 However, the tester states that the particle size met the specification standards after around May 2017 due to the reduction in production volume and switching of the production tanks.

the specification-based standards, even in repeated tests.

Normally, it is impossible to issue a test record and ship the product if the product does not meet the internal standards or the standards in the specifications. However, since the testers recognized that the test results could vary a lot depending on from what part of the product lot the test sample was collected, they considered that the products did not have major problems in terms of quality, and they altered the test results to issue test records.

In addition, especially stringent levels were stipulated in the specifications agreed to with a specific customer,[73] and it was difficult to meet these standards consistently. However, neither the Quality Management Office nor the Sales Department attempted to take any measures to discuss specification revisions with the customer. It was because they were afraid that the customer would react sharply if negotiations were opened to relax the standards after explaining that the product could not be shipped because of non-conformance to the specification-based standards.

Furthermore, the quality management regulations call for product inspections of quicklime and slaked lime to be made immediately before shipment, such as on-truck[74] tests. According to the testers, however, trucks loaded with the product did not wait until testing was completed in most cases, so the usual practice was that product inspection results were determined after the shipment only referring to process inspection data of the products. Therefore, although the product did not meet the specification-based standards in the above post-shipment product inspection, it was difficult to recover already shipped products after notifying the customer of the false results, leading to tacit approval of the product shipment made in this way. This situation must be one factor that caused improprieties.

It was not possible to identify the specific start time of improprieties due to the retirement of the then testers. Still, based on the fact that some employees confirm that the product quality was less stable at the time of company establishment than now, and that the improprieties continued for many years after the testers changed, the possibility cannot be denied that the improprieties started in the mid to late 1970s when production and shipping started. Also, according to testers, it is deemed that the improprieties became usual practice from the mid to late 1990s at the latest.

c. Recognition of parties involved

(a) Actors

The Calcia Group testers and the employees engaged in issuing test records were responsible for the improprieties involving quicklime, slaked lime, calcium carbonate, and dustproof solidification material. It is also acknowledged that, as for quicklime, an explicit request was made by sales staff of the Sales Department to alter the test results of

73 For a number of products, standard values were not specified in the specifications agreed to with customers. However, it is considered that, for customers who do not specify standards, in-house standards for quicklime and slaked lime were set stringently just like the JIS-set special grade standards, unless laxer standards than the JIS were explicitly required. It is because of the results of hearings with sales staff and also in consideration that the pamphlet of soil stabilizer, laxer than industrial use products, describes “JIS R 9001 special-grade item.”

74 “On-truck” means the method of collecting samples from predetermined places of the lot when products are loaded on a truck.

the product that did not meet the standards of the specification.[75]

Furthermore, The General Manager of the Quality Management Office and section manager with authorization to approve test recognized that the test record was falsely issued with altered values but did not seek to stop the situation because they considered it an unavoidable practice.

(b) Those who noticed improprieties

Regarding the improprieties related to quicklime, the actual residual carbon dioxide and ignition loss test results were entered in the daily inspection report together with the internal standard values, and the information was sent to the General Manager and deputy General Manager of the Plant on a daily basis. In addition, at meetings for sharing of product quality information, including the monthly Quality Control Promotion Committee,[76] it was reported that monthly average product inspection results, such as residual carbon dioxide and ignition loss, did not meet internal standards with considerable frequency.

However, all the participants of the committee, including the current General Manager of the Plant, denied having been aware of the improprieties involving quicklime, except for one ex-General Manager of the Quality Management Office. So, it cannot be said that these people were specifically aware of the situation.

In addition, no facts have been confirmed that suggest that any executives of Ube Material were involved in these improprieties, or that they did not take corrective measures while recognizing it.

d. Response after discovery improprieties

After the improprieties were discovered, the Plant ships only the products that conform to the internal standards and customer-agreed specifications in the production inspection. Regarding quicklime and calcium carbonate, the company has requested, or plans to request, customers to relax the standards of the specifications. The Plant will treat dust-proof solidification material failing to meet the standards in the test as ordinary non-dust proof solidification material, or otherwise disposal or other handling will be carried out.

4. Quicklime (at Mine Plant)

(1) Outline of improprieties and products involved

The Mine Plant produces quicklime,[77] slaked lime, and calcium carbonate mainly using limestone (40 to 70 mm in diameter) extracted at the Isa Mine in Mine, Yamaguchi Prefecture.

There were improprieties involving the issue of test records to specific customers for quicklime produced at the

75 One employee stated that staff of the Sales Department made the same request for dustproof solidification material in 2014.
76 It was held on a monthly basis in the office of the Chiba Plant with the participation of the General Manager and deputy General Manager of the Plant; section managers of the Production Section 1, Production Section 2, Engineering Section, Supervision Department, Civil Engineering Sales Management Office, Tokyo Sales Department Section 1; as well as general managers of the Quality Assurance Department (including TV conference) and Quality Management Office; in addition to section manager of the Calcia Group.
77 Includes desulfurizing agent containing quick lime mixed with calcium carbonate and fluorite.

Plant. When the test results for sulfur content, phosphorus, etc. did not meet the specification-based standards, the Sales Department issued a test report with arbitrary values that met the standards. Then, the product was shipped.

(2) Regular work flow

At the Mine Plant, limestone is fired in a Beckenbach annular shaft kiln to produce quicklime. The Quality Management Office conducts analysis and testing of the product components in accordance with the test details and frequency required on the specifications.

When the Production Section requests the Quality Management Office for product inspection, the testers in the Quality Management Office will conduct the tests and enter the results in the Quality Management System.[78]

At the same time, the testers will handwrite the values displayed as the analysis details on the Quality Management System in the daily inspection report and store the Excel file with data in a shared folder accessible by the staff of the Production Section, Sales Department and others for information sharing.

Then, on checking the values on the Excel file, the section manager of the Quality Assurance Department (concurrently serving as the General Manager of the Quality Management Office) will approve shipment on the Quality Management System and give the test record from the Quality Management System to the Sales Department and Production Section, and these sections will ship the product.

(3) Details of improprieties

a. Aspects of improprieties

Normally, as mentioned in (2) above, the test record was supposed to be issued by the Quality Assurance Department based on a request from the Production Section. However, in fact, when the test results of sulfur content, phosphorus, etc. did not meet the specification-based standards of products for specific customers, the Sales Department staff issued test records altered to arbitrary values that met the standards, and the products were shipped.[79] According to the audit report dated March 19, 2008 and statements by the staff, the Sales Department asked the Quality Management Office to issue test records by altering the values to meet the standards by reasons that i) there was a risk of receiving demand for price reduction if customers were asked to relax the standards, and ii) there was a risk that customers would demand compensation for damages if they knew of the non-conformance to the specification-based standards, however, the Quality Management Office refused. Thus, the Sales Department altered the values by themselves.

In addition, upon receipt of a customer request, the Sales Department staff added fictitious test result values of copper, tin, arsenic, antimony and cobalt that had not actually been measured by the Quality Management Office

78 Analysis results of some of the test items (residual carbon dioxide, sulfur content, phosphorus, etc.) are automatically displayed on the analysis detail screen of the Quality Management System via the shared PC in the analysis room. Results of the test items not automatically linked to the analyzer are entered manually by the tester in the Quality Management System.

79 Prior to this, it also became the practice that the test record issue requests were made by the Sales Department, not the Production Section, contrary to the in-house regulations.

and issued test records, and the product was shipped.

b. Start of improprieties and ongoing status

The Mine Plant is known as a factory producing high-quality lime products.[80] Since many customers expect high product quality, the specifications agreed to with customers often included very high-level values to be achieved.[81]

However, at the Isa Area in the Isa Mine that produces limestone, a raw material for the lime products of the Plant, there was a risk of depletion of high-quality limestone after years of mining from the 1948 operation start. Therefore, the Ube Industries Isa Cement Factory started mining limestone in the Maruyama Area in 1973 and in the Amagoi Area in 1982, but the quality of limestone from these areas is inferior to that of the Isa Area. In particular, since around 1985, after mining started in the Amagoi Area, there were cases where the values for phosphorus did not meet the standards in the specifications agreed to with a specific customer.

Furthermore, the fuel was changed around 1988 to reduce costs, and there have been cases since that time in which the sulfur content in the fuel did not meet the standards in the specifications agreed to with specific customers.

Although the Quality Management Office refused to alter the values in the test records, the Office did not stop the Sales Department from issuing the test records under its own responsibility. As mentioned in a. above, the Sales Department considered it unavoidable to issue test records with test results altered to values that met the specification-based standards, because it would lead to loss of customer trust as well as demands for price reduction or claims for damages if it was not possible to satisfy the standards in the specifications agreed to with customers and ship the products to customers. It is believed that the issue of test records with values altered to meet the specification-based standards for product shipment started from the latter half of the 1980s.

c. Recognition of parties involved

(a) Actors

As noted in a. and b. above, the staff of the Sales Department undertook these improprieties, and the conduct continued in the Department even after the staff were transferred. In this regard, the sales staff stated that they did not propose to customers to relax the standards in the specifications, since there was concern that it would lead to demands for price reductions and claims for damages. Furthermore, the current General Manager of the Sales Department also stated that he was aware of the situation.

(b) Those who noticed improprieties

These improprieties undertaken at the Mine Plant were taken up within the company several times from 2004 at the

80 The Mine Plant uses limestone with a diameter of 40 to 70 mm, which is easy to fire evenly, and has eight Beckenbach annular shaft kilns. It is possible to select suitable kilns and tanks for each product grade and customer, thus producing high-quality quicklime.
81 For example, the standard for residual carbon dioxide for the JIS-set special grade product was 2.0% maximum, while the most stringent standard at the Mine Plant was 0.2% maximum. Also, for quicklime produced at the Chiba Plant, few customers specified sulfur or phosphorus content as specification standards, and, when specified, the most stringent level of sulfur content was 0.03% or less, and that of phosphorus was 0.025% or less. On the other hand, more stringent standards were set at the Mine Plant, such as 0.015% or less for sulfur content and 0.008% or less for phosphorus for some customers.

latest in internal audits and on other occasions and were discussed as a problem. For example, the audit report dated March 19, 2008 stated, “Agreement has not been reached with the Sales Department that requested data alteration for more than ten years ago” and “bearing the risk of a significant negative legacy from the past.” These reports were prepared under the name of the corporate auditor at the time and reported to executives, including the then Representative Director and General Manager of the Production Control Division. The current General Manager of the Quality Assurance Department, Ube Material, also recognized the improprieties in March 2008 at the latest. The then General Manager of the Plant and General Manager of the QM Office, who received a hearing from the corporate auditor in 2004, recognized such improprieties, and the successor to the General Manager of the QM Office above stated that he recognized the improprieties.

Meanwhile, the former General Manager of the Quality Management Office who assumed office in April 2016, the current General Manager who took office in October 2017, and the current General Manager of the Plant who was assigned in October 2015 state that they were not aware of the improprieties, and there is nothing to suggest that they were.

d. Response after discovery of improprieties

From 2007 at the latest, the Mine Plant continuously held negotiations with customers to relax the standards in the specifications in order to solve the problem of non-conformance of the sulfur content and phosphorus test results to the standards in the specifications. As a result, currently the Plant has received consent to relax the standards from all customers with whom it was difficult to meet the standards in the specifications. It is planned to enter into a memorandum of understanding with customers who have not yet signed.[82]

5. Soil Conditioner

(1) Outline of improprieties and products involved

Ube Material sells soil conditioners to solidify soft ground at construction and civil engineering sites, to improve the soil properties. In conjunction with these sales, the Chiba Plant conducts tests (hereinafter “Soil Test”) to examine the strength of ground improved by means of the soil conditioner[83] at the request of customers. The improprieties involved issuing test records in which, if the value indicating strength obtained from the Soil Test exceeded the target value, the value was altered to a lower value than the value actually obtained in the test and then shipping the product.

(2) Regular work flow

When staff at Sales Section 2, Tokyo Sales Department, Calcia Division, receive a request for soil testing using soil conditioner from a civil engineering contractor customer, the testers (section manager and staff) of a group engaged in soil testing in the Quality Management Office (hereinafter “Soil Group”) will conduct the soil tests and enter the

82 The in-house regulation violation of the Sales Department issuing test records has also been resolved now.

83 The soil tests include i) CBR test to evaluate the strength of the subgrade and roadbed for the asphalt pavement design and construction, ii) the uniaxial compression test to evaluate the bearing capacity of the structural foundation subgrade and earth load, stability of the slope and other structure, required for the improvement of ground fill, and iii) the cone index test to evaluate the running performance of construction machines in relation with the improvement of the foundation ground of the structure.

test results in a work PC.[84] In the Soil Test, an acceptance decision is not made based on the test results, but a target value (control value) is established for each test. After the soil test, the tester will receive approval from the General Manager of the Quality Management Office and issue a test record.

(3) Details of improprieties

a. Aspects of improprieties

Normally, as mentioned in (2) above, actual results of the Soil Test must be entered in the test record. For specific customers, however, when the test results shown in the test record exceeded the target values, and, also, the request for altering the values was received from the customer through Sales Section 2, the testers of the Soil Group altered the printed test records and the PC test results to values close to the target value. Then after receiving approval from the General Manager of the QM Office, the test record was reissued to the customer. On the other hand, no cases were confirmed in which when the test result was lower than the target value the record was altered to a higher value than the actual value.

b. Circumstances behind start of improprieties and ongoing status

It is not possible to clarify the details of the specific timing and circumstances of the start of the improprieties due to the retirement of the then testers of the Soil Group. However, according to interviews with the current testers, it occurred when the Soil Test started at the Chiba Plant, and it was accepted as common practice in the late 1980s at the latest.

The testers explained the following points in relation to the background of the improprieties. Soil Test results vary a lot depending on the soil dryness and mixing conditions at the time of adding soil conditioner. So, it was a common practice to add soil conditioner in an amount around 30% greater than the minimum amount considered to be necessary to just attain the target value. It is why in some cases the obtained test results were better than the target value. And sometimes when the actual test results were much better than the target values, the testers receive a request from the customer to lower the test results to around the target values due to a request they received from their buyer.[85] They considered that there was no actual harm involved, since the target value had been cleared anyway. So, they altered the values to a lower value than the actual value, closer to the target value. According to the testers, the circumstances by which the soil test results were altered were like this.

c. Recognition of parties involved

(a) Actors

As stated in a. above, the testers who received the request from Sales Section 2 perpetrated the improprieties after receiving approval from the General Manager of the Quality Management Office.

84 The Quality Management System is not used.

85 It is not clear whether the customers actually received such requests from their buyers. However, the staff of Sales Section 2 said that it might have been necessary to alter the values close to the target value because, if the target values set for soil tests were substantially exceeded, there might be criticism that unnecessarily too much soil conditioner was used during the internal audits at customers' buyers (mostly local governments), and it might affect the subsequent fiscal year's budget setting.

(b) Those who noticed improprieties

The staff of Sales Section 2 and the General Manager of the Quality Management Office said that sometimes when the customer requested alteration of test results that exceeded the target values on the wishes of the buyer, they altered the test results after receiving approval from the General Manager of the Plant. On the other hand, the then General Manager of the Plant said that he had no recollection of receiving the reports, but that probably he had been consulted.

In addition, no facts have been confirmed that would suggest that executives of Ube Material were involved in the improprieties, or that they did not take corrective measures while recognizing them.

d. Response after discovery of improprieties

After the discovery of the improprieties, the results in the test records are not altered even if the customer requests it.

6. Limestone Aggregate

(1) Outline of improprieties and products involved

Limestone aggregate is a type of coarse aggregate which is a component of ready-mixed concrete.[86] Ready-mixed concrete is produced by mixing mainly cement, water and aggregate. Using limestone aggregate as coarse aggregate helps suppress the occurrence of cracks due to self-shrinkage and drying shrinkage of the cement.

Ube Industries (or Ube Material after business transfer. See (2) a below) perpetrated the improprieties of selling to Kanto Ube Concrete Co., Ltd. (hereinafter referred to as "Kanto Ube"), one of its 100% subsidiaries, limestone aggregate from the Torigatayama Mine (hereinafter referred to as "Limestone Aggregate from Wrong Location") mixed with the limestone aggregate mined at the Isa Mine, the producer agreed between the parties concerned. As a result, Kanto Ube perpetrated the improprieties of manufacturing and selling ready-mixed concrete made of limestone aggregate composition different from that declared when obtaining JIS certification or ministerial approval.

(2) Regular work flow

a. General discussion

Ube Industries sold limestone aggregate as a raw material for ready-mixed concrete to Kanto Ube, a ready-mixed concrete manufacturing and sales company.

On April 1, 2016, Ube Industries transferred the marketing and logistics operations for limestone-related products, including limestone aggregates, to Ube Material (hereinafter referred to as "the Business Transfer"). The sales channels before the Business Transfer will be explained in b. below, and after in c. below.

b. Sales channels for limestone aggregate and ready-mixed concrete before business transfer

(a) Sales channels for limestone aggregate

Ube Industries entered into an agreement (hereinafter referred to as "the Limestone Aggregate Supply Agreement") with the Toyosu, Urayasu[87] Yokohama and Mizonokuchi factories (hereinafter "the Four Kanto Ube Factories") of Kanto Ube, a company manufacturing and selling ready-mixed concrete, for the supply of limestone aggregate from the mine located at Isa in the city of Mine, Yamaguchi Prefecture.[88]

Ube Industries extracted limestone at Isa Mine, which is the mine owned by the company, as stipulated in the Limestone Aggregate Supply Agreement, processed it into limestone aggregate, and transported it to each of the Four Kanto Ube Factories via the Chiba Limestone Center. In addition, if it was agreed to sell limestone aggregates from mines of other companies (hereinafter "Other Companies' Mining Products") in addition to Isa Mine products to any of the Four Kanto Ube Plants, such mining products were also transported to the Chiba Limestone Center and then transported from the Center to the destination.

During these delivery processes, quality inspection of the limestone aggregate was conducted at Ube Industries and the Nishinihon Test Laboratory of the Japan Testing Center for Construction Materials.

(b) JIS certification of ready-mixed concrete and ministerial certification

Article 37 Item 1 of the Building Standards Act requires that concrete to be used for the foundation of buildings, major structural sections and other parts designated by Cabinet Order as being important for safety, fire protection or sanitation conform to the specific JIS standards that are specified by the Minister of Land, Infrastructure, Transport and Tourism. In 2007, the Four Kanto Ube Factories each obtained JIS A 5308 (Ready-mixed concrete) certification for all the ready-mixed concrete to be manufactured and sold, in accordance with the JIS Law.

In addition, Article 37 Item (ii) of this law and the announcement[89] of the Ministry of Construction require that high-strength concrete (concrete with higher strength than normal concrete) be approved by the Minister of Land, Infrastructure, Transport and Tourism (ministerial certification). Each of the Four Kanto Ube Factories has obtained ministerial certification[90] for some of the ready-mixed concrete manufactured and sold, in accordance with the above based on Article 37 Item (ii) of the Building Standards Act and the Ministry of Construction announcement.

87 The Urayasu Plant was run for some time by Urayasu Ube Namacon Co., Ltd., but this report treats it as the Urayasu Plant of Kanto Ube.

88 The Limestone Aggregate Supply Agreement between Ube Industries (or Ube Material after the Business Transfer) and the Four Kanto Ube Factories stipulates two ways of deliveries: delivery of limestone aggregate from the Isa Mine only, or that of two types of limestone aggregate from the Isa and Hachinohe Mines. Since no improprieties are associated with the limestone aggregate sold as a Hachinohe Mine product, the explanation here will be limited to the product sold as an Isa Mine product for the sake of simplicity.

89 Announcement of the Ministry of Construction No. 1446, May 31, 2000, "Building materials for the building foundations, major structural parts, etc.; and Japanese Industrial standards, Japanese Agricultural Standards and quality-related technical standards to which these building materials should conform"

90 There are two types of ministerial certification for high-strength concrete: one to be obtained by the factory alone, and the other to be acquired jointly with construction companies. Required strength, cement types, etc. are different in each certification.

(c) Sales channels for ready-mixed concrete

As mentioned in (b) above, each of the Four Kanto Ube Factories obtained JIS certification and ministerial certification for ready-mixed concrete. Therefore, these factories are supposed to produce ready-mixed concrete using the limestone aggregate in line with the composition declared in obtaining the JIS certification and ministerial certification.

The Four Kanto Ube Factories sold the ready-mixed concrete they manufactured to cooperative industry associations (hereinafter "Industry Associations"), each of which is responsible for each business area of the four factories. This ready-mixed concrete was delivered to general construction companies via the Industry Associations and registered distributors. For the ready-mixed concrete business with the associations, Kanto Ube submitted a formulation plan documenting the type, production area, composition, etc. of the handled limestone aggregate. The document was delivered to the general construction companies through the Industry Associations and registered distributors.

In these processes, quality inspection of the limestone aggregate and that of ready-mixed concrete were carried out at the Four Kanto Ube Factories, while a quality audit was conducted by the Industry Association located in each business area of the Four Kanto Ube Factories.

c. Sales channels for limestone aggregate and ready-mixed concrete after business transfer

Even after the Business Transfer referred to in a. above, Ube Industries continued to mine limestone and process it into limestone aggregate as before. However, with the Business Transfer, Ube Industries began to sell the limestone aggregate to Ube Material, who then sold it to Kanto Ube (i.e., Ube Material obtained procurement and sales functions). Thereafter, the sales channels for limestone aggregate and ready-mixed concrete were the same as described in b. above.

In line with the Business Transfer, the contractual status of Ube Industries in the Limestone Aggregate Supply Agreement between Ube Industries and the Four Kanto Ube Factories, mentioned in (a) above, was transferred to Ube Material.

(3) Details of improprieties

a. Aspects of improprieties

(a) Sales of limestone aggregate from wrong location (by Ube Industries and Ube Material)

Ube Industries perpetrated improprieties from around 2006 by delivering mixed limestone aggregate to the Four Kanto Ube Factories, when the Isa Mine product had to be supplied but the available amount was not sufficient. The shortfall was made up at the time of shipment from the Chiba Limestone Center to the destination by mixing limestone aggregate from Torigatayama, Niyodogawa Town in Kochi Prefecture, with genuine limestone aggregate from Isa Mine. Specific circumstances are as in b. below.

(b) Manufacture and sale of ready-mixed concrete with limestone aggregate from wrong location (Kanto Ube)

As mentioned in (2) b. (b) above, the Four Kanto Ube Factories had obtained JIS certification and ministerial certification for the manufacture and sale of ready-mixed concrete, and in getting the JIS certification and ministerial certification, an application showing details of the product, such as the quality and location of production, was submitted.

The Four Kanto Ube Factories were granted with some ministerial certification some time earlier than around 2006. At that time the Isa Mine was mentioned as the production location in the application.

Ube Industries began to sell Limestone Aggregate from Wrong Location sometime around 2006, so Kanto Ube was legally required to reobtain the ministerial certification, but the required procedures were not taken.

After that, the Four Kanto Ube Factories obtained the JIS certification and some other ministerial certifications declaring the use of the Isa Mine product only, when Limestone Aggregate from Wrong Location was first sold,

Furthermore, Kanto Ube prepared and submitted a formulation plan mentioning the use of the Isa Mine product when selling ready-mixed concrete to general construction companies via Industry Associations and registered distributors.

b. Circumstances behind start of improprieties and ongoing status

As mentioned in (2) b. (a) above, the Ube Industries' limestone aggregate business consisted of extracting limestone from Ube Industries' Isa Mine and processing it into limestone aggregate for sale. The annual sales volume of limestone aggregate from Isa Mine by Ube Industries was about 900,000 tons around early 2000. However, the sales amount declined afterwards, because of the following background. Inherently, both limestone as a raw material for cement and as a raw material for limestone aggregate must be extracted in a well-balanced manner from one mine. As the production volume of cement decreased around 2003, however, the amount of limestone to be used as a limestone aggregate raw material also was decreased in order to maintain the balance. Furthermore, the limestone transport ship, *Koseki Maru*, was retired, reducing transportation capacity.

There were also other factors. Usually for limestone mining, blasting with explosives is used. Since Ube Industries' initial mining site for limestone aggregate had high moisture content, it was necessary to use PVC pipes to load explosives. However, an incident occurred as the PVC pipes were broken by blasting and fragments were mixed with the limestone aggregate. Around 2006 Ube Industries received from Kanto Ube information on the contamination with PVC fragments. First Ube Industries temporarily sold limestone aggregate to Kanto Ube by mixing it with other companies' mining products, but, in order to fully respond to the issue identified by Kanto Ube, Ube Industries had no choice but to change the extraction site and mining method with capital investment.

After Ube Industries changed the site and mining method from about the same year, however, the new mining site and method did not make it possible to produce a sufficient amount of limestone aggregate, contrary to expectations.

From that year, due to the fact that the sales volume of Isa Mine products declined, Ube Industries informed its Isa Mine limestone aggregates clients, who were ready-mixed concrete manufacturers and sales companies, that they could not produce a sufficient amount of Isa Mine products going forward. This information was not given to some ready-mixed concrete manufacture and sales companies, including Kanto Ube. From before this time, Ube Industries had already procured limestone aggregate from other locations, including the Torigatayaman, Garo, and Hachinohe mines, besides the Isa Mine products, and sold them as products from such other locations. So, with the consent of each ready-mixed concrete manufacture and sales company, they switched to selling other locations' mine products. They still continued to deliver 100% Isa Mine products to some ready-mixed concrete manufacture and sales companies who required 100% Isa Mine products.

On the other hand, Kanto Ube was left without such information. Ube Industries decided to continue selling Isa Mine products to the Four Kanto Ube Factories as agreed in the Limestone Aggregate Supply Agreement executed with these factories. However, when there was insufficient limestone aggregate from the Isa Mine, they began to sell limestone aggregate mixed with products from the Torigatayama Mine.

The then sales staff of the Limestone Aggregate Sales Group of Ube Industries cited reasons for failing to conform to the Kanto Ube agreement, as follows: i) at that time they did not think of any quality problems with ready-mixed concrete just because of the different extraction location, ii) they presumed that the situation was temporary, and they thought it would possible to correct the situation as the production volume recovered, and iii) they were concerned that they would inconvenience Kanto Ube by explaining the actual situation. The improprieties continued without being regarded as a problem at the time of the Business Transfer.

c. Recognition by parties involved

(a) Actors

The improprieties of selling mixtures of limestone aggregate of different origins was perpetrated prior to the Business Transfer by the sales staff of the Limestone Aggregate Sales Group, Ube Industries, and after it by the Tokyo Sales Department (called Resource Sales Group at the time of Business Transfer) of Ube Material. Sales representatives of the Calcia Division of Ube Material were also aware of the issue.

A sales representative said that these improprieties occurred because the Calcia Division lacked awareness of such issues and thought that there was no particular need to immediately rectify the situation.[91]

91 The executives and employees of Ube Industries, Ube Material and Kanto Ube state that limestone aggregate never failed to pass the quality inspection in the past simply due to the difference of the production location, and also those of Ube Industries and Ube Material say that they understood limestone aggregates and ready-mixed concrete were free from any quality problems even if products from the Isa and Torigatayama mines were mixed.

(b) Those who noticed improprieties

During the course of this investigation, there has been insufficient evidence to suggest that the executives of Ube Industries or Ube Material were aware of the improprieties. Sufficient evidence has not been obtained either to show that any officials of Kanto Ube were clearly aware of improprieties committed by Ube Industries, Ube Material or Kanto Ube.

Still, the representative director and president of Kanto Ube from 2008 to May 2013, who once worked at the Cement and Construction Materials Division, states that he thought from around 2006 that, when there was a shortage of limestone aggregate from the Isa Mine to be sold by Ube Industries, it was possible to mix in Other Companies' Mining Products and sell them in contravention of agreements.

d. Response after discovery of improprieties

According to an executive officer of Ube Industries, Ube Industries and Ube Material have sold the Isa Mine products only, without mixing them with Torigatayama Mine products, to the Four Kanto Ube Factories since May 1, 2018. This was made possible by increasing the mine production by means of overtime work and other measures, and by adopting a delivery system putting the highest priority on limestone aggregate ships at the port.

However, since this is an emergency response that cannot be maintained in the long term, and necessary procedures are being taken to reobtain JIS and ministerial certifications, while supplying 100% of Isa Mine products with the above measures.

After consulting with the Ministry of Land, Infrastructure, Transport and Tourism and the Ministry of Economy, Trade and Industry on May 1 and 2, 2018, Kanto Ube has been receiving investigation and verification by the institutions in charge of the JIS and ministerial certification conference with regard to whether there is no problem in the quality and safety of ready-mixed concrete made using Limestone Aggregate from Wrong Locations, not mentioned in the application for acquisition of JIS and ministerial certifications.

The improprieties were revealed in November 2017 as a result of the In-house Investigation. Therefore, Ube Industries and Ube Material continued, or gave tacit consent to the continuation of, the improprieties for about six months from the recognition of the issue until specific corrective measures were taken.

III. Tohoku Tekkosya Co., Ltd.

1. Organization Outline

Tohoku Tekkosya Co., Ltd. was established in 1935 as Tohoku Mining Co., Ltd., which changed to its present trade name in 1971. After Tohoku Tosoh Chemical acquired all its shares and made it a subsidiary in 1995, Ube Material acquired all the shares in May 2007 and it joined the UBE Group. The head office and factory of Tohoku Tekkosya are located at Higashiyama in the city of Ichinoseki, Iwate Prefecture. It owns high-quality limestone mining areas

in Higashiyama through a joint venture, and its main business is the production of lime products including quicklime, slaked lime, and calcium carbonate. This company only engages in the manufacture of the products, while sales of the products are handled by the Tohoku Sales Department of Ube Material. While the kilns of the Chiba and Mine Plants of Ube Material are of the Beckenbach type, the kilns of Tohoku Tekkosya are of the Maerz type.

2. Quicklime, Slaked Lime and Calcium Carbonate

(1) Outline of improprieties and products involved

Tohoku Tekkosya manufactures quicklime, slaked lime, and calcium carbonate, and the improprieties involving these products were perpetrated as follows.

a. Quicklime

The improprieties involving quicklime were that when the test results in the product inspection results did not meet the standards in the customer-agreed specifications, the test results from the process inspection were used. Test records showing these values were issued, and the product was shipped.

Additional improprieties occurred when a transportation truck made several rounds of trips in the quicklime delivery to one customer. When product inspection by collecting test samples from the first transport vehicle did not meet the standards in the customer-agreed specifications, samples from another vehicle were collected for another inspection. If the inspection test results satisfied the designated standards, a test record showing such test results was issued, and the product was shipped.

b. Slaked lime

The improprieties involving slaked lime were that when the test results in the process inspection[92] did not meet the standards in the customer-agreed specifications, test result figures were made up referring to the most recent test results, and test reports showing these figures were issued, and the product was shipped.

c. Calcium carbonate

The improprieties involving calcium carbonate were that when the test results in the process inspection[93] did not meet the standards in the customer-agreed specifications, test result figures were made up based on the most recent test results, and test reports showing these figures were issued, and the product was shipped.

(2) Regular work flow

a. Test procedures, etc.

The specifications are prepared and agreed upon with customers by the Tohoku Sales Department of Ube Material. After the agreement, manufacture and testing of the products are undertaken by Tohoku Tekkosya respectively as

92 Product inspection was not carried out for slaked lime, and only process inspection was conducted.
93 Product inspection was not carried out for calcium carbonate, either, and only process inspection was conducted.

follows.

(a) Quicklime

The testers of the Production Section regularly must collect test samples from the process of the baking of quicklime, conduct tests on residual carbon dioxide activity (or activation) level[94] and other points. Based on these test results, operational adjustments are to be made such as control of the kiln operations, and selection of the tanks for finished quicklime. The results of the manufacturing process inspection[95] performed by the testers should be recorded in the daily kiln operation report and saved as an electronic file on a company server.

After that, testers (group head and staff) of the Quality Management Group of the Safety Management Section conduct product tests, including component analysis of residual carbon dioxide, calcium carbonate (CaO) and other items, as well as activity level and ignition loss for samples taken from transport vehicles at shipment.[96]

(b) Slaked lime

Slaked lime is to undergo the manufacturing process inspection covering residual carbon dioxide, particle size and other items to be conducted by the Quality Management Group. There are no procedures for collecting and testing samples from transport vehicles at the time of shipment.

(c) Calcium carbonate

Tohoku Tekkosya crushes limestone mined from the mining area adjacent to the factory, adjusts the particle size, and using small-sized limestone particles, produces calcium carbonate and ships the product. As the manufacturing process inspection, test samples of limestone are collected, and the Quality Management Group performs component analysis of calcium carbonate (CaO) and other material, as well as testing particle size, moisture content, etc. For calcium carbonate, either there are no procedures for collecting and testing samples from transport vehicles at the time of shipment.

b. Issue of a test record

At Tohoku Tekkosya, the product inspection test reports are managed by a unique sales management system different from what Ube Material uses. This sales management system is not configured to automatically obtain the test results of the analyzer. So, either the product inspection tester of the Quality Management Group in the case of quicklime, or the process inspection tester of the Group in the case of the slaked lime, handwrites the test results in a memo, and enters them in the computer system. As mentioned in a(a) above, the results of tests conducted by the Production Section tester during the quicklime manufacturing process are written in the daily operation report and are also stored on the company's shared server as an electronic file.

94 A value representing the reaction rate of quicklime or other products.
95 Process inspections at Tohoku Tekkosya are conducted by testers in the Production Section during the manufacturing process for the purposes of adjusting the kiln operation or changing tanks for quicklime storage. They are not tests performed by the Quality Management Group.
96 Some of the cargo is put in a bag-like packaging material called a flexible container bag and shipped, but in either case, test samples are taken from products to be shipped at the time of shipment.

The format of the test record is determined for each customer. The test record for each customer is prepared by putting the values shown on the sales management system manually into the electronic file prepared for issuing a test record. The test record is delivered to the customer through the Operation Group, Management Section.

(3) Details of improprieties

a. Aspects of improprieties

(a) Quicklime

In the case of quicklime, as mentioned in (2) a(a) above, test samples are taken from transport vehicles at the time of shipment to conduct product inspection. However, the delivery truck has already departed when the product inspection results come out, and there may be cases in which test results obtained after the shipment do not meet the designated specifications. In such cases, entering actual test results in the sales management system, the tester of the Quality Management Group wrote arbitrary values in the test record either copying the process inspection results or making up values similar to the process inspection results.[97] Specifically, if the product inspection test results did not meet the standards, while the tester entered the actual values in the sales management system based on the handwritten memo of the value,[98] the tester used arbitrary values by referring to the values obtained from the manufacturing process inspection for the purpose of issuing the test record for the customer. If the test items were not required in the manufacturing process inspection, the tester used arbitrary values based on past product inspection test results and the like. The figures were manually entered into the electronic file for issuing the test record, and thus a test record showing values different from the original product inspection was issued. The test record was delivered to specific customers, and the product was shipped.

In addition, shipments destined to some customers were so large that multiple trucks were used for one delivery. In such a case, the first product inspection was made taking a product sample from the cargo on the first truck, but it sometimes occurred that the test results of residual carbon dioxide and ignition loss did not satisfy the standards in the customer-agreed specifications. Then, product samples were collected again from succeeding vehicles to repeat product inspection, and if the additional product inspection test result satisfied the standards, a test record showing the test results was issued to ship the product.[99]

(b) Slaked lime

As for slaked lime, just like the quicklime case, when the test results of residual carbon dioxide did not meet the standards in the customer-agreed specifications in the product inspection, the tester of the Group, while entering the actual test results in the sales management system put arbitrary values based on the most recent test results that met the standards to issue the test record. The test record was delivered to specific customers, and the product was

97 If the test was not required in the process inspection, the tester chose to obtain test result data from past product inspections, etc.
98 The tester stated that, since the actual product conditions would be unknown, if the measured value were not entered in the sales management system, the actual measured value was entered in the system.
99 The tester stated that, if the test was repeated several times, it was possible to obtain satisfactory results any way. Even if the agreement with the customer does not explicitly define which truck to collect test samples from, it is considered as contrary to the contractual intent to collect test samples from other trucks when the standards were not met without telling the customer accordingly.

shipped.

(c) Calcium carbonate

In the case of calcium carbonate, the tester of the Quality Management Group states that it was rare that the product inspection results did not meet the standards in the customer-agreed specifications. However, as with quicklime, when the test results for particle size, moisture level and other items did not meet the standards in product inspection, the testers, while entering the actual value in the sales management system, entered arbitrary values based on the most recent test results that met the standards for the purpose of issuing the test record for the customer. The test record was delivered to specific customers, and the product was shipped. In addition, in cases where there were larger variations compared with past test results even though they met the standards, arbitrary values with less variance were made up based on past test results to show on the test record.

b. Circumstances behind start of improprieties and ongoing status

The kilns of Tohoku Tekkosya are of the Maerz type as mentioned in 1above. While this type of kiln has good thermal efficiency, the value of the residual carbon dioxide of produced quicklime tends to be large. Furthermore, Tohoku Tekkosya was compelled to use a firing method that would raise the activity level because some customers considered the quicklime activity level very important. However, the firing method to increase the activity level is likely to increase residual carbon dioxide value.[100] Since Tohoku Tekkosya has only two kilns, it is not possible to have a number of different production means prepared and finely select the most proper one according to the quality required by each customer. Therefore, at Tohoku Tekkosya, the test results for residual carbon dioxide of quicklime frequently did not meet the standards in the customer-agreed specifications. This also led to other related deficiencies, such as ignition loss and limestone content failing to meet the standards in the customer-agreed specifications.

Regarding slaked lime, other points can also be mentioned in addition to the above circumstances. The quicklime with originally higher residual carbon dioxide value was used as a raw material. Furthermore, the process of re-pulverizing quicklime with large particles was adopted, which tends to increase the residual carbon dioxide value again. Thus, the residual carbon dioxide value tended to go higher.

It is understood that, at Tohoku Tekkosya, the improprieties persisted for many years, because these quality problems were left without solution, and the specification standards were not revised either in consultation with the customer in view of the actual quality conditions. The quality of calcium carbonate is relatively stable compared to other products, as it is rare that the test results do not meet the standards in the customer-agreed specifications. Still, when it did not meet the standards in the specifications, priority was given to shipment of the product, so the improprieties continued for this product, too.

100 While the kilns of the Chiba and Mine Plants of Ube Material are of the Beckenbach type, those of Tohoku Tekkosya are of the Maerz type. While the Maerz type is better in thermal efficiency than the other type, residual carbon dioxide in quicklime is likely to be greater, since carbon dioxide comes into contact with the quicklime in the Maerz type kiln.

According to the interviews conducted as part of The Investigation, the improprieties at Tohoku Tekkosya were already underway when the current head of the Quality Management Group joined the company in April 1995. Consequently, it was deemed that these improprieties had been taking place long before 2007, when it became a subsidiary of Ube Material. In The Investigation, it has not been possible to identify the executives or employees (former executives or employees) who knew whether the inappropriate conduct went on before 1995, so the details of the timing of the improprieties are not clear.

c. Recognition of parties involved

(a) Actors

The improprieties were perpetrated by the tester of the Quality Management Group. Furthermore, the current Manager of the Safety Management Section, who is a direct superior, also recognized the improprieties. The section manager is in the position of approving the daily inspection report output from the sales management system showing the actual test results. (Furthermore, it can be confirmed that the section manager was previously staff of Quality Management, committing the improprieties by himself.)

The Investigation cannot confirm that the staff of the Sales Section of the Tohoku Sales Department, Ube Material, responsible for drafting and signing specifications with customers, was aware of the improprieties. It cannot confirm either whether the staff of the Sales Section gave instructions or pressure to the staff of the Quality Management Group to prompt the improprieties.

(b) Those who noticed improprieties

Since around 2008 when Tohoku Tekkosya became a subsidiary of Ube Material, it has held a Quality Meeting[101] once a month to share information on product quality, where the occurrence percentage of non-standard products was reported as the "rate of non-standard products" in the documents for each product. For example, according to the Quality Meeting Minutes in September 2017, the rate of non-standard products of quicklime from the two kilns was 55.0% and 50.0% respectively, and that of slaked lime was 88.2%.[102]

Some employees who attended the Quality Meeting said they presumed some improprieties were taking place in issuing the test records. It was because, although the meeting documents showed some products did not conform to designated specifications with considerable frequency, few of the test records values were out of the standards. (However, such employees did not take any action to ascertain with the testers of the Quality Management Group concerning the improprieties or endeavored to rectify them).

Furthermore, it was confirmed that some of the those sent from Ube Material to Tohoku Tekkosya as directors attended a quality meeting and realized that the rate of non-standard products was very high for some products,

101 The meeting is attended by the President, Directors, Factory General Managers, Production Section Manager, and managers and staff of the Safety Management Section of Tohoku Tekkosya, as well as staff of the Sales Section, Tohoku Sales Department of Ube Material as representatives from sales functions.

102 Standard in "non-standard" here refers to the in-house standard, and it is maximum 2.0% for residual carbon dioxide in quicklime and maximum 1.5% for that in slaked lime. These values were equivalent to the standards for customers.

realizing that product quality at Tohoku Tekkosya was not stable. In fact, they came to know about the improprieties by receiving information on the manipulation of test record values from the Manager of the Safety Management Section. However, under the circumstances that it was not easy to stabilize the product quality and to manufacture products satisfying the standards in the customer-agreed specifications, they took no specific measures to rectify the improprieties, considering that shipment could not be interrupted as the fundamental problems could not be solved.

d. Response after discovery improprieties

Concerning quicklime, slaked lime and calcium carbonate, the company plans to talk with customers about lowering the specification standards, especially the residual carbon dioxide value. They are also considering obtaining the customer's approval to indicate the process inspection test results in the test record, not the test results of the product inspection to be conducted at the time of shipment.

Regarding slaked lime, the company has reviewed the manufacturing process and already renovated it in order to lower the value for residual carbon dioxide.

IV. UBE EXSYMO CO., LTD.

1. Organization Outline

UBE EXSYMO CO., LTD. was established in 1966 as UBE-NITTO KASEI CO., LTD. After becoming a wholly owned subsidiary of Ube Industries through a share exchange in 2003, it changed to its current trade name in 2015. UBE EXSYMO's main business lines are plastic products, such as optical communication cable materials, spacers for liquid crystal displays, corrugated plastic, composite fibers and others. In addition to the Tokyo head office, the company has production sites, the Gifu Factory in Gifu City, and the Fukushima Factory in Koriyama, as well as sales offices in five domestic locations (Osaka, Ube, Nagoya, Fukuoka, and Ariake).

In addition, the company has UBE-NITTO KASEI (WUXI) CO., LTD. as its overseas business base.

2. Rasen Compose

(1) Outline of improprieties and products involved

Rasen compose is a product made by preparing a core made of steel wire or fiber-reinforced plastics, covering the core with polyethylene resin and extruding a spiral groove on the surface. It is mainly used as a component called a "slot" in underground trunk cables and overhead cables for the protection and high-density storage of optical fiber.

At UBE EXSYMO, the improprieties involved not actually conducting tensile tests of the product's central core made from fiber-reinforced plastics that were required in the specifications agreed with certain customers and issuing test records showing values taken from past records and shipping the product.

(2) Regular work flow

a. Difference in work flow between metal products and non-metal products

Rasen compose is broadly divided into two types: metal products having the core made from steel wires and non-metal products using fiber reinforced plastics.

Since the core of the metal products uses steel wire purchased from outside, the company shows the product specification values of the supplier to its customers, and a tensile test is not performed repeatedly at UBE EXSYMO.

On the other hand, for non-metal products, the raw materials for the fiber-reinforced plastics of the core are purchased from outside, and the entire core is manufactured by UBE EXSYMO. Therefore, for customers with tensile tests specified as test requirements in the specification, it is necessary to perform a tensile test by the company.

b. Tensile test method

The tensile test is a test conducted by attaching both ends of the core to the tensile test equipment, applying load until the core is broken, and measuring the maximum stress and the elongation of the core. But, if the core is directly attached to the test equipment, problems occur such as test piece breakage at the grip (chuck) of the machine, and it will be difficult to obtain correct test results.

For this reason, in order to perform the tensile test properly, it is necessary to fix the specimen in the test equipment after applying special processing to both ends of the specimen. It takes up to ten days to apply this process.

b. Tester and work flow for issuing test record

A tester of the Quality Assurance Section carries out the product inspection.

The tester must handwrite tensile test results in a daily inspection report called a “yellow file” and also enters values in the inspection record database.

The section manager of the Quality Assurance Section shall confirm the test results entered in the database and approve the issue of the test record for the passed product if the specification standards are met, and then the staff responsible for issuing test records in the Quality Assurance Section will issue a test record.

(3) Details of improprieties

a. Aspects of improprieties

Normally, as mentioned in (2) above, in shipping non-metal products, the tensile tests must be conducted and the test results be entered in the test record. However, the tests were not conducted and a test record showing values taken from past records was delivered to the customer, and the product was shipped.

b. Circumstances behind start of improprieties and ongoing status

(a) Background situation

Previously, in UBE EXSYMO, both the metal products and the non-metal products were manufactured at the Gifu Factory, while at the Fukushima Factory, only metal products not requiring tensile tests were manufactured.

Consequently, Rasen compose tensile tests had to be conducted only at the Gifu Factory. This factory, however, started to issue test records around 1991 at the latest without carrying out tensile tests, showing values taken from past results instead. This was because it had taken a lot of time and labor to prepare for the tensile tests, and often the tensile tests did not go well. In addition, it was recognized that the non-metal core should naturally meet the standards if there was no problem in the performance of each single fiber purchased from outside, because the core was made of twisting purchased fiber-reinforced plastics. This situation continued until November 2013 when the production line of Rasen compose was transferred to the Fukushima Factory.

(b) Fukushima Factory times

As mentioned in (a) above, Rasen compose was initially manufactured at both the Gifu and Fukushima Factories. However, as the market shrank, and customers were concentrated in the Kanto region, it was decided to unify the manufacture of Rasen conpose at the Fukushima Factory, and in November 2013 the production line for non-metal products was transferred from the Gifu Factory to the Fukushima Factory.

In this way, production of Rasen compose at the Gifu Factory ended. The Fukushima Factory began the production of non-metal Rasen compose in addition to the metal products continuing from before. Since this factory had made only metal products not requiring tensile tests until then, the factory had no test equipment for the tensile tests, nor were there testers with tensile test experience.

As a result, after November 2013 when the production line of Rasen compose was transferred to the Fukushima Factory, the improprieties came to be perpetrated persistently for completely different reasons from the Gifu Factory; there was no equipment for conducting tensile tests and no qualified testers.

c. Recognition of parties involved

(a) Actors

It can be confirmed that, after the production line was transferred, the staff of the Quality Assurance Section responsible for issuing test records and the section manager of the Fukushima Factory, while recognizing that there was a requirement for the tensile test in the test record form for the non-metal product, did not conduct tensile tests because there was no test equipment for conducting the tests, and test records showing past test result values were delivered along with the product to the customer.

On the other hand, it has not been possible to confirm any facts that would suggest that the testers in the Quality Assurance Section were aware of the fabrication. It is because neither the daily inspection report nor the inspection

record database had test requirements for the tensile test, and nobody stated that tensile tests had ever been conducted in the past.[103]

(b) Those who noticed improprieties

No facts have been confirmed that the testers or others of the Quality Assurance Section, except for the staff responsible for issuing test records and the section manager as in (a) above, were aware of the specific facts regarding the improprieties.

The Quality Assurance Section manager of the Fukushima Factory proposed the introduction of test equipment for conducting the tensile test in 2016. However, the proposal document cited only the aging of machinery, efficiency improvements and other points as reasons for the equipment introduction, without any mention of the improprieties being made. So it was not an opportunity for the General Manager or other executives of the Factory to learn of the improprieties.

No other facts have been found that would suggest that executives of UBE EXSYMO, Factory Managers or others were involved in the improprieties, or that they did not take corrective measures while recognizing them.

d. Response after discovery of improprieties

In response to the discovery of the improprieties, preparation is being made for the introduction of the test equipment for tensile tests, such as the training of the tensile test operations for the testers of the Quality Assurance Section, Fukushima Factory. In the meantime, tensile tests are now being conducted at the Gifu Factory as tentative measures before the introduction of the equipment in the Fukushima Factory.

3. UC Fiber

(1) Outline of improprieties and products involved

UC fiber is a composite fiber that uses two kinds of plastics with different properties. It is mainly used as a fiber for non-woven fabric. UC fiber is used for various products by imparting functions such as hydrophilicity, water repellency, antibacterial characteristics, bulking, flame retardancy, elasticity, etc. depending on the purpose of use

At UBE EXSYMO, the improprieties involved not actually conducting durable hydrophilicity testing on the UC fiber required in the customer-agreed specifications, issuing test records showing values copied from past records, and shipping the product.

(2) Regular work flow

Testers of the Quality Assurance Section must conduct the product inspection of UC fiber to focus on fineness,

103 There were no systems or other preparations for conducting tensile tests at the Fukushima Factory, since only metal products were made that did not need tensile tests.

strength, elongation, number of crimps, crimp rate, cut length, oil agent adhesion, durable hydrophilicity, and other points which are required in the specifications agreed upon with customers.

The durable hydrophilicity test consists of pouring or dripping saline solution onto a non-woven fabric test piece and measuring the time length spent for the non-woven fabric to absorb the saline solution and the amount absorbed.

The tester is supposed to perform durable hydrophilicity tests according to the standards in the customer-agreed specifications and enter the test results by hand in a daily inspection record called a "thread quality note" for each production number and quality grade of samples.

The company has no specific system for managing UC fiber test results or issuing test records. The test results are entered directly into a test record template in MS Word and issued.

(3) Details of improprieties

a. Aspects of improprieties

Normally, the durable hydrophilicity test results must be entered in the test record based on the actual test, as mentioned in (2) above, but the test was not conducted, and a test record showing test results taken from past records[104] was issued and given to the customer, and the product was shipped.

b. Circumstances behind start of improprieties and ongoing status

Although the details of the start and other circumstances of the improprieties have been made clear, it is thought that the durable hydrophilicity test had not been conducted for considerably many years. It is because i) specific methods for the durable hydrophilicity test methods have not been handed over properly until today due to the retirement of the former staff responsible for issuing test records at the Quality Assurance Section, and ii) there is no mention concerning how to make non-woven fabric test pieces in the manual.[105]

Also, some interviewees in the hearings state that the test results at UBE EXSYMO serve only as reference values since customers will compound the UC fibers with chemical fibers from other companies before processing them into various kinds of non-woven fabrics. This recognition of the tests is probably one of the reasons why the improprieties had persisted for many years without being resolved.

c. Recognition of parties involved

(a) Actors

It has been confirmed that the staff of the Quality Assurance Section responsible for issuing test records and the

104 The staff responsible for issuing test records said that they selected, from among past rest records, a case in which the results of the tests other than the durable hydrophilicity test were similar and copied the durable hydrophilicity test result shown there.
105 The specifications mentioned only the "UBE EXSYMO method" and "the company's method" as the test procedures, and there was no mention as to how to make the non-woven fabric test piece.

section manager delivered test records to customers with durable hydrophilicity test results copied from past measurements and shipped the product, while being aware that the tests were not conducted.

On the other hand, the testers of the section said that they did not know that durable hydrophilicity tests were required in the specification. Therefore, it has not been confirmed that they did not carry out durable hydrophilicity tests while recognizing it as improprieties.

(b) Those who noticed improprieties

No facts have been confirmed that the testers and others of the Quality Assurance Section other than the staff responsible for issuing test records and the section manager, as in (a) above, were aware of the improprieties.

No facts have been confirmed, either, that would suggest that executives of UBE EXSYMO were involved in the improprieties, or that they did not take corrective measures while being aware of it.

d. Response after discovery of improprieties

After the improprieties were discovered, UBE EXSYMO has been conducting durable hydrophilicity tests in accordance with the specifications agreed with each customer.

V. UBE-MC Hydrogen Peroxide Limited

1. Organization Outline

UBE-MC Hydrogen Peroxide Limited is a subsidiary of Ube Industries, which has a 51% stake in Ube MC. Ube MC manufactures and sells hydrogen peroxide.

2. Hydrogen Peroxide (Case 1)

(1) Outline of improprieties and products involved

The improprieties at Ube MC involved 60% hydrogen peroxide (hereinafter "60% HP") and 45% hydrogen peroxide (60% peroxide diluted with water at the company, hereinafter "45% HP"), to be shipped to specific customers, among the products handled by the company. On the test records of these products, arbitrary values for content of aluminum, iron and copper (hereinafter "aluminum, etc.") and TOC[106] (or total organic carbon) were shown, regardless of the test results reported by the contracted external laboratory to conduct quality inspections, and the products were shipped to customers.[107]

(2) Regular work flow

Ube MC transfers 60% HP procured from another hydrogen peroxide manufacturer (hereinafter "HP Supplier") into a large tank at the company to store it.

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106 This is a test for measuring the total amount of organic matter contained in water.

107 There was only one customer each for 60% HP and 45% HP throughout the period in which the improprieties occurred.

The tests of 60% HP were conducted by taking a test sample from every lot brought to the tank. The 45% HP product is made by diluting 60% HP after sampling. Tests of 45% HP for items other than Aluminum, etc. and TOC were conducted similarly by collecting a test sample after dilution. As for Aluminum, etc. and TOC, it was decided to use theoretical values to be obtained by calculation of the 60% HP test results and the dilution ratio.

Although most of the tests of 60% HP and 45% HP can be conducted in Ube MC's own facilities, the company does not have testing equipment to measure Aluminum, etc. and TOC so these tests are requested at an external laboratory.

It takes only about one day to get the test results from the company's equipment, but it takes about two days from test request to report of results from the external laboratory. After the receipt of test results from the laboratory, the Quality Assurance Section, Technical Department, issues a test record and it must be approved by the General Manager of the Department. The quality manual stipulates that a test record should not be issued for nonconforming products (test results do not meet the specification standards) or products for which testing has not been completed.

The test record issued by the Quality Assurance Section is given to the customer when the related 60% HP or 45% HP is delivered by tank truck.

(3) Details of improprieties

a. Aspects of improprieties

Normally, as mentioned in (2) above, the Quality Assurance Section of the Technology Department should issue a test record showing the results of Aluminum, etc. and TOC tests after receiving the test report from the external laboratory. However, not waiting for the report of the test results from the laboratory, they issued a test record by entering arbitrary values based on past test results for the same type of product and shipped the product.

In particular, they created two tables on Excel from around 2015 for managing the results of each test item. The actually measured value was entered in the "measured value" column, while the value to be shown in the test record was entered in the "analysis table value" column. The Quality Assurance Section staff responsible for issuing test records entered actual measurement results obtained in house in both tables. On the other hand, the staff put arbitrary values for Aluminum, etc. and TOC only in the analysis table value column[108] before receiving test results from the laboratory and issued a test record showing those values. Then, after obtaining the actual test results from the external laboratory, they entered these values in the measured value column. Therefore, two different values[109] were entered in in the Excel file for Aluminum, etc. and TOC.

According to the records created and stored by the staff of the Quality Assurance Section responsible for issuing

108 The QA Section staff responsible for issuing test records made up likely values estimated from the past test result trend and entered them.

109 There were some times when two values were coincidentally the same, but in many cases they were different.

test records, it can be confirmed that these improprieties were being conducted continuously around 1998 at the latest as usual practice. Regarding test results of Aluminum, etc. and TOC, the actual test results satisfied the standards in the customer-agreed specifications in many instances, even when arbitrary values were in the test record, However, the Aluminum, etc. value did not satisfy the designated standards[110] at least five times, as far as actually measured values could be confirmed. However, these results were not notified to related customers in any case. At the July 2017 customer audit, in particular, the responsible staff of the Quality Assurance Section prepared reporting materials by extracting only the data from the analysis table value column and showed them as actual test results to prevent exposure of improprieties. The staff did all this after reporting it to the General Manager of the Factory concurrently serving as General Manager of the Technology Department.

b. Circumstances behind start of improprieties and ongoing status

These improprieties were conducted with two specific customers, and shipments to one of them started in 1992. It can be confirmed from the product inspection tables, etc. created and kept by the staff of the Quality Assurance Section responsible for issuing test records that the analysis results of the samples collected by around January 1994 were listed without omission, and these results were consistent with the values shown in the test records. On the other hand, for a majority of the analysis results of the samples collected in or after February 1994, test records were issued although the analysis value were not shown in the product inspection value table, or the analysis values shown in the table did not match the test record values. Therefore, it appears that the improprieties involving this customer began around February 1994.

Shipments to the other specific customer related to the improprieties started in the same year. From the product inspection value tables, it can be confirmed that the analysis results of the samples collected by around July 1998 were listed without omission, and the analysis results were consistent with the values shown in the test records.[111] On the other hand, however, for the majority of the analysis results of the samples collected in or after August 1998, test records were issued although the analysis values were not shown in the product inspection value table, or the analysis value shown in the table did not match the test record values. Therefore, it appears that the improprieties involving this customer began around August 1998.

Regarding the circumstances of the start of the improprieties, one of the Quality Assurance Section staff responsible for issuing test records at the time of impropriety discovery made the following statement. Ube MC received 60% HP cargo by ship, so it occurred sometimes that the arrival was delayed due to weather or other factors. However, at that time, the company did not tell the customer that it supplied another company's 60% HP to the customer. Since Ube MC was supposed to be delivering its own products,[112] it was difficult to notify the

110 While the aluminum value should be maximum 1.0 w/w ppm in accordance with the customer-agreed specifications, 1.2 w/w ppm was detected in the tests requested on June 13, 2005 and May 29, 2007; and 1.1 w/w ppm was detected in the tests requested on April 11, 2006 and April 8, 2015.

111 It is possible that inconsistent figures were entered by mistake.

112 It can be said that the customer concerned did not accept other companies' products around the business start in 1994. After that, however, Ube MC sent a "Quality control self-diagnosis report" to the customer on June 30, 2015, and in this document checked "Yes" in the item confirming whether there were cases of products from other companies delivered as substitutes. It was Ube MC's notification to the customer that they were delivering other companies' products. Furthermore, on September 12, 2017, the company

customer of the delay in arrival of the ship and ask them to permit a delay in the delivery schedule. As a result, the company did not have time to wait for the test report from the external laboratory before product shipment. So, issuing a test record with arbitrary values without waiting for the report of measured values became unavoidable.

However, according to the QA Section staff responsible for issuing test records, shipment of 60% HP arrived about once a month, and the tank had a capacity of as large at 600 tons, never becoming empty. Considering these points, it is unlikely that the shipping schedule was so tight that they could not wait two days for the test report from the external laboratory. Considering that the QA Section staff stated that it was a usual practice to issue a test record showing arbitrary values, not actual test results, for Aluminum, etc. and TOC, it is likely that the improprieties were a usual practice from around 1998 at the latest, and it was not because of the shipment timing issue, although the necessity of shipment before the arrival of the test report could be only a kind of trigger for improprieties.

The improprieties started around February 1994 due to the circumstances described above. It became a usual practice around 1998 at the latest, and after that, it persisted until discovered in the In-house Investigation conducted in November 2017. Possible reasons for the long continuation of the improprieties as described above are that i) test results had been virtually satisfactory in most cases, ii) the staff of the Quality Assurance Section responsible for issuing test records did not consider Aluminum, etc. and TOC tests were not so important, and iii) the control by the General Manager of the Technology Department was not sufficient.

c. Recognition of parties involved

(a) Actors

The staff of the Quality Assurance Group of the Technology Department, responsible for entering result values of Aluminum, etc. and TOC tests and issuing test records, conducted the improprieties from around February 1994 through November 2017.

(b) Those who noticed improprieties

The current General Manager of the Factory concurrently serving as the GM of the Technology Department (assuming the office in January 2014) states that he noticed, when approving test records, the test records showed test result values although the “measured value” column of the Excel file for test result management was blank at the beginning of his appointment. However, he had no particular concern about the empty measured value column, and approved it only checking that it matched the analysis table value column.[113] He also noticed sometimes that the entries in both columns differed slightly. However, since one of the staff of the Section responsible for issuing test records asked him to only refer to the analysis table value column when checking test records, he stated he did not pursue the matter anymore.[114]

stated explicitly, “In order to fulfill our supply responsibility, we may receive supplies of products that satisfy quality assurance standards from other domestic companies,” in the remarks column of the specification sheet, and submitted it to the customer.

113 However, the manager said that this check was not made in all cases.

114 It is probable that the General Manager heard the explanation from the QA Section staff responsible for issuing test records, who had a longer service career in the company than himself, and had been taken in easily.

According to this General Manager, the manager learned of the improprieties at the time of the audit by the customer in July 2017, mentioned in a. above. It was because, at that time, he received a report from the QA Section staff responsible for issuing test records i) that arbitrary values were shown as Aluminum, etc. and TOC test results in the test record, and ii) that the report extracting only the analysis table value column values were submitted to the customer as actually measured values. However, neither the General Manager nor the staff responsible for issuing test records took appropriate action. As for the reasons for non-action, the General Manager cites the difficulty of explaining it to the customer, and of changing already established operations.

In this regard, the staff of the Quality Assurance Section responsible for issuing test records, who was engaged in entering result values of Aluminum, etc. and TOC tests and issuing test records from around 1997, states that he was instructed to handle both items by entering arbitrary values by a person who was in the position of General Manager of the Technology Department from October 1996 to October 2003, and later appointed president of Ube MC, and who currently serves as advisor to the company. However, the adviser states that he was not aware of the improprieties. Since there is no other evidence to prove this, it cannot be confirmed with certainty that the adviser ordered the improprieties or was aware of them.

d. Response after discovery of improprieties

Since November 2017, after the discovery of the improprieties by the In-house Investigation, test records have been issued after entering test results of Aluminum, etc. and TOC in the measured value column on the Excel file, based on the test report from the external laboratory.[115] The staff responsible for input now perform a double check for the accuracy of the entry in the measured value column.[116]

Also, it was noted, in relation to the trigger for the improprieties that after new hydrogen peroxide was added to a storage tank, it became impossible to ship the product from the tank until the test results were received from the external laboratory. So, it has been decided that, if shipments are planned to take place around the time of new product acceptance, operation schedule should be adjusted before putting new product in the tank to allow smooth shipment of the products in the tank for which test records have already been issued. Also, it is ensured now that, if a test result of Aluminum, etc. or TOC of a certain product does not satisfy the standards in the specifications, the test record will not be issued, thereby the product will not be shipped.

3. Hydrogen Peroxide (Case 2)

(1) Outline of improprieties and products involved

The improprieties at Ube MC involved the 35% hydrogen peroxide (hereinafter “35% HP”), to be shipped to a specific customer, among the products handled by the company. Test records were issued showing arbitrary values as fictitious evaporation residue and free acid test results that were different from the values that would have been obtained if they were actually measured, and the product was shipped.

115 In addition, the “analysis table value” column of the Excel file was deleted.

116 This double check has been done from before.

(2) Regular work flow

By contract, Ube MC must procure 35% HP from other hydrogen peroxide manufacturers and supply the product to the company (depot) contracted for storage, repackaging into smaller sizes, shipment and other operations of the product as a stock point (hereinafter "Stock Point").[117] In actual practice, products must directly be sent from the supplier to the Stock Point. In addition, the supplier must issue its test record for 35% HP to Ube MC, then the Quality Assurance Section of the Technology Department, Ube MC, shall issue Ube MC's test record for the Stock Point based on the supplier's test record. The General Manager of the Department must approve the Ube MC's test record, and the record be delivered to the Stock Point.

(3) Details of improprieties

a. Aspects of improprieties

Normally, as mentioned in (2) above, the Quality Assurance Section of the Technology Department should issue a test record for the Stock Point based on the HP Supplier's test record. However, arbitrary values were entered as evaporation residue and free acid test results in Ube MC's test records. Specifically, the HP Supplier's test record had * shown as the evaporation residue and free acid test results. There was a statement in the margin, reading "The standard value is guaranteed for items with * by means of regular analysis," but specific values were not shown. However, in Ube MC's test records, arbitrary values were entered as evaporation residue and free acid test results by the staff of the Section responsible for issuing test records, which were compiled from measured values for the same type of product made by Ube MC. In addition, during the process, the QA Section staff responsible for issuing test records added the evaporation residue and free acid values from Ube MC's test record to the right of the * mark in the HP Supplier's test record.

In addition, the 35% HP produced by the HP Supplier had lower evaporation residue and free acid values (meaning product of a higher purity) than the same product manufactured by Ube MC. The arbitrary values used by the Quality Assurance Section were considerably higher than those presumed to be obtained in actual measurement of the product. In other words, the values indicated a product of lower purity. The reasons for entering values indicating lower purity although it was actually a high-purity product are as mentioned in b. below.

Although arbitrary values were shown as test results of evaporation residue and free acid in the test record, the actually measured values satisfied the standards, since the 35% HP was a high-purity product as mentioned above.

b. Circumstances behind start of improprieties and ongoing status

Ube MC shipped 35% HP manufactured in house for applications such as cleaning food and food containers (hereinafter "Food Cleaning Use") until around the end of 2002. In this year, however, it was revealed and became a social problem that illegal additives were contained in a fragrance maker's product. In consideration that the stabilizer contained in the Ube MC's hydrogen peroxide was not permitted as a food additive, Ube MC decided not

117 When supplying the products, Ube MC sold some products to SP, who then sold the products to its customers.

to ship its own products for Food Cleaning Use. And it was decided to provide, from 2004, its Food Cleaning Use products to customers (including the SP) with the HP Supplier products (with phosphoric acid, permitted food additive, contained as a stabilizer). With this HP Supplier, Ube MC had had dealings from before.

The product that the HP Supplier delivered to the SP was of such high purity that it was difficult to manufacture at Ube MC. With this background, the improprieties of showing arbitrary values as evaporation residue and free acid test results in the test record started, based on instructions from the General Manager of the Technology Department from October 1996 to October 2003, who was later appointed president of Ube MC and currently serves as advisor to the company.

Regarding the motive of these improprieties, the adviser states that, as the indication of correct values of evaporation residue and free acid test results would reveal that the product was of very high purity, the HP Supplier did not want its customers to know that very high-purity products were delivered for Food Cleaning Use,[118] so he gave instructions to enter lower purity.[119]

The improprieties started around 2004 under the above circumstances and persisted until it was discovered in the In-house Investigation in November 2017. The reason for the long continuation of these improprieties may be attributed to the fact that the conduct involved the indication of lower purity values than what would be detected in actual measurement, making it difficult to perceive the inappropriateness, because the product satisfied the designated standards with a large margin.

c. Recognition of parties involved

(a) Actors

The improprieties began around 2004 in response to instructions given by the above adviser and continued by the two staff of the Quality Assurance Section, Technology Department, responsible for issuing test records until discovered in the In-house Investigation held in November 2017

(b) Those who noticed improprieties

As mentioned in (a) above, the improprieties were perpetrated by the staff responsible for issuing test records in the Quality Assurance Section in accordance with the instructions of the above adviser, and nobody else was aware of the improprieties.

The current General Manager of the Factory concurrently serving as General Manager of the Technology Department (assuming the office in January 2014) states that, in approving the test records, all he did was verify the

118 The adviser stated that the 35% HP of the HP Supplier is extremely high in purity for Food Cleaning Use and that it is unusual to use such high-purity products for this purpose. The advisor also said that the HP Supplier's testing record had the statement "The standard value is guaranteed by means of regular analysis" for evaporation residue and free acid values outside the column, without showing actual values, because the supplier did not want to make it clear that they were supplying such a high-purity product.

119 On the other hand, some employees speculate that the motivation was to pretend that the purity of the HP Supplier's products was almost the same as that of the company's own lower-purity products to ensure sales of the company's products to the customer without problem.

values handwritten on the HP Supplier's test record to the right of the * mark of evaporation residue and free acid test results, as in a. above, and the corresponding test results entered in the Ube MC's test record. The handwritten values were arbitrary ones entered by the staff responsible for issuing test records in the QA Section, as stated in a. above, but the General Manager states that he mistook the values for those actually measured by either the HP Supplier or Ube MC.

d. Response after discovery of improprieties

The improprieties were discovered in the In-house Investigation conducted in November 2017. After that, the method of showing the values on the test record was changed as agreed by SP. Now only upper limit values are shown[120] instead of actually measured values.

VI. Ube Sand Co., Ltd.

1. Organization Outline

Ube Sand Co., Ltd. (hereinafter referred to as "Ube Sand") is a wholly owned subsidiary of Ube Industries, with a head office and factory located in Mine City, Yamaguchi Prefecture. Since its establishment in 1985, the company has been manufacturing and selling silica sand and silica powder. Currently, the company is also engaged in the processing, purchase and sale of building materials; the manufacture and sale of paint-related equipment and materials; the purchase and sale of cast steel and steel-making materials, among other things. In 2014 the company acquired ISO 9001 quality management certification.

2. Silica Powder

(1) Outline of improprieties and products involved

Silica powder is a product made from hard silica as a raw material, and its main component is silica. It is mainly used for admixtures such as cement and refractory materials. The improprieties at Ube Sand involved silica powder. When product inspection test results of the particle's specific surface area (hereinafter "Specific Surface Area") of the silica powder manufactured and shipped for a specific customer did not meet the standards in the specifications, test records were issued showing values based on the process inspection test results which met the specification standards, and the product was shipped.

(2) Regular work flow

These improprieties at Ube Sand involved tests for Specific Surface Area conducted on part of silica powder to be shipped to specific customers.

Shipment of silica powder must be made by running a transportation vehicle carrying the cargo back and forth between the factory and the supplier until the entire amount ordered by the customer is delivered.[121] It was

120 "0.01 or less" for evaporation residue and "0.001 or less" for free acid.
121 As far as confirmation can be made by objective data, two truck runs were enough at any time for the delivery amount of silica powder to this customer.

stipulated in the specification agreed to with the specific customer that the product inspection[122] for Specific Surface Area should be conducted from the first lot of cargo, i.e., the cargo on the first round of shipment. So, the product inspection was made for the product loaded in the first round trip. Product delivery could be made only when the test results met the standards in the specifications. If not, it was not possible to deliver the cargo unless special consent was given by the customer.

The tester in the Manufacturing Section of the Manufacturing Department must conduct the test for Specific Surface Area using a dedicated measuring instrument, enter the test results in the system, and issue a test record from the system. In the specification agreed with the customer, in referring to inspection lots "one inspection lot must cover products produced during one month." Concerning test records, one record must be issued for each month and for each day of shipment. For inspection of Specific Surface Area, "one-day inspection must cover the products made during one day." Furthermore, "one-day inspection must cover the products on the first Jet Pack vehicle (transportation truck)." So, tests are to be conducted on each manufacturing day and shipping day.

(3) Details of improprieties

a. Aspects of improprieties

Normally, as mentioned in (2) above, it was agreed that, when the Specific Surface Area of silica powder measured in the product inspection did not satisfy the standards in the specifications, the cargo could not be delivered unless the customer agreed to disregard the non-conformance to the standard in a consultation.

However, in order to reduce the time required for delivery, the tester of the Manufacturing Section of the Manufacturing Department i) carried out product inspection while the cargo of the first round trip was being loaded on the truck, but made the truck leave for the destination in parallel with the test, before the test results were obtained, and ii) after receiving the product inspection results, gave the test record to the driver before the departure of the second round trip to deliver it to the customer. It was supposed that, if the test result did not satisfy the standards in the specifications, they could not ship the product unless the customer approved it and it was necessary to halt shipment.[123] But, on the contrary, the tester did not halt shipment but, instead, after consulting with the Deputy General Manager of the Manufacturing Department, he issued a test record showing test results that met the specification standards referring to the periodic test results, and shipped the product as compliant product to the customer.[124]

Specifically, the tester decided that, if the product inspection test result for Specific Surface Area exceeded the upper limit value of the specification standards, the tester notified the Deputy GM of a value that satisfied the

122 According to the specifications agreed with the customer, the Specific Surface Area test must be conducted to cover products made during one day as one day's inspection lot (product inspection). Another test of the silica powder must be conducted by taking a test sample from the products made during one day (periodical inspection).

123 However, there were no internal rules or operations stipulated concerning specific methods of shipment suspension.

124 The tester stated that, if the test results for Specific Surface Area in the product inspection did not meet the specification standards, he looked for data of periodic tests conducted around the periodic test of the product concerned that was supposed to be made (periodic test was conducted usually two to three days before the product inspection) and entered a value based on the results of these tests

specification standards instead of the actually measured value or discussed the matter with the Deputy GM before deciding to issue the test record by entering a factitious satisfactory value. The employee of the Manufacturing Department who received system input instructions from the Deputy General Manager entered the fictitious test result in the system, issued a test record, and delivered it to the driver of the transport vehicle.[125,126]

The employee who was a tester at the time of impropriety discovery stated as follows—the product inspection test results of Specific Surface Area did not meet the specification standards at a frequency of about once a month, but no special measures were taken like telling the first truck to come back to the factory when the test results did not turn satisfactory, for some reasons including the fact that there were no regulations or procedures stipulated to halt shipment; and that improprieties were committed in all cases in which the specification standards were not met during the entire time that the tester engaged in the product inspection.

b. Circumstances behind start of improprieties and ongoing status

At the time of the business start in 1998, there was no upper limit of Specific Surface Area stipulated in the standards in the specifications. After that, Ube Sand and the customer agreed to lower the standards [at the request by Ube Sand] in February 2006 since it was considered difficult for Ube Sand to manufacture products with high Specific Surface Area due to various reasons including the facilities' aging according to the minutes of specification change discussions at that time and other materials, although further details are left unclear due to the retirement of the then testers of the Department at that time. However, at the time of specification changes, an upper limit was set in the standards, although the background is unknown. Then, it is considered that, after the facilities were upgraded, products whose Specific Surface Area was too high were made.

Also, the one who served as Deputy General Manager of the Manufacturing Department at the time the improprieties were revealed was involved in the testing of silica powder from around 2011. He stated that he was aware of the improprieties around 2011 when the then tester reported the existence of the problem to him.

From the circumstances above, it seems that the improprieties occurred sometime between February 2006 to 2011, although details of the start remain unclear due to the retirement of then testers. The improprieties were perpetrated continuously without correction from the above period until December 2017 when it came to light.

c. Recognition of parties involved

(a) Actors

The improprieties involving silica powder were perpetrated from the start time mentioned in b. above to December 2017 by the testers of the Manufacturing Section, Manufacturing Department, conducting product inspections of

125 The tester stated that it was possible that, at periodic tests as well, the previous tester (retired) had perpetrated the improprieties involving tests for Specific Surface Area, but it was not possible to determine this matter from objective data, and this conduct was not deemed to have occurred.

126 The tester stated that it was possible that, when the test result was within the limit but close to the maximum limit, the previous tester (retired) entered a made-up test result close to the median of the standards, not the measured value. However, it was not possible to judge from the objective data, and this conduct was not deemed to have happened.

Specific Surface Area. Furthermore, as mentioned in a. above, the testers and the Deputy General Manager of the Manufacturing Department discussed the alteration of test results, so the Deputy General Manager is also deemed to have responsibility for the improprieties during that period.

In relation to motives for the improprieties, the tester and the Deputy General Manager at the time of discovery of the improprieties stated that the processes had been passed on from their predecessors, so it did not occur to them to change the shipping method by revising the specifications or operational procedures. In addition, the testers stated that, since a higher test result of Specific Surface Area is considered to indicate higher quality due to the nature of silica powder, they did not think there would be any problems with actual product quality when the upper limit value in the specification standards was exceeded. It cannot be denied that this understanding lay behind the ongoing improprieties.[127]

(b) Those who noticed improprieties

It cannot be confirmed that there are facts that would show that other individuals (including Ube Sand executives) than the employees mentioned in (a) above were involved in these improprieties or did not take remedial measures while being aware of them.

d. Response after discovery of improprieties

After the discovery of the improprieties, handling procedures have been changed as follows: collect product sample before loading cargo on the truck and conduct and finish product inspection so that test results can be obtained before the first truck departure. Thus, products that do not meet the specification standards will not be shipped.

Also, at present, discussions are being held with the customer concerning relaxation of the product inspection specifications of the Specific Surface Area.

127 The agreement with customers other than the one in question establishes only the lower limit for Specific Surface Area value. It suggests that the above explanation is reasonable to some extent. However, objective data supporting it has not been confirmed.

Chapter 5: Appropriacy of In-house Investigation, etc.

I. Overview of In-house Investigation, etc.

1. In-house Investigation

(1) Overview

In light of the frequent occurrence of quality fabrication and alteration of data at other companies, which has become a social issue, the representative director and president of Ube Industries directed the Executive Officer in Charge of the Environment and Safety Department to implement the In-house Investigation at each of the companies and divisions in the UBE Group ("Each Company/Division") in November 2017 to verify the existence or non-existence of quality assurance-related improprieties in the UBE Group.

Investigation period	First stage	November 27 – December 15, 2017
	Second stage	December 27, 2017 – January 31, 2018
Investigation scope	First stage	Products of Each Company/Division and all the businesses of the companies in the Group Product Safety Committee[128] (with priority on those with major social impact and those with special applications)
	Second stage	All the products, businesses and Group companies that are closely related to quality assurance but were not subject to the first stage investigation
Investigation method	To be determined through consultation between Each Company/Division and the Environment and Safety Department	

As stated above, the method of investigation was to be determined after consultation between Each Company/Division and the Environment and Safety Department, but the actual investigation method varied greatly depending on Each Company/Division because it was mostly decided at the discretion of Each Company/Division. The findings of the investigation of Each Company/Division are as described in (2) below.

(2) Investigation Findings

a. Investigation findings (overall)

On December 11, 2017, the Executive Officer in Charge of the Environment and Safety Department provided the representative director and president of Ube Industries with interim report on the Polyethylene Case and the Other Improprieties that had been found at that time. He reported all the findings obtained at the completion of the first-stage investigation to the president on December 25.

The executive officer also submitted the report "Results of Emergency Quality Investigations of UBE Group" (hereinafter, "In-house Investigation Report") summarizing the results of the In-house Investigation to the Board of Directors of Ube Industries on January 24, 2018. The findings of the investigation are as follows.

128 The Group Product Safety Committee is one of the management committees established in the UBE Group with the objective of promoting product safety and quality assurance. The committee's secretariat office comprises subsidiaries and second-tier subsidiaries of Ube Industries.

(i) Shipment of products that breach laws or do not meet quality standards was not confirmed.

(ii) However, improprieties that are considered as ongoing, intentional and wide-ranging in influence were reported in polyethylene products sold by UBE-Maruzen Polyethylene; it was judged that taking entire UBE Group-basis response measures was necessary, and such measures were already initiated.

(iii) Improprieties were also confirmed for five other products (i.e., four products of the Chemicals Company and one product of the Cement and Construction Materials Company), but it was considered that all these cases were limited in influence and, with resolution measures already underway, could be handled individually.

b. Polyethylene Case identified by the In-house Investigation Report

The In-house Investigation Report reported the following points concerning the Polyethylene Case.

(i) Details of improprieties

The improprieties consisted of not conducting tests on a number of items such as mechanical properties and electrical properties out of those shown in the specifications agreed upon with customers and entering any arbitrary numbers within a certain range obtained from past results on the test report, and the report was sent to the customer. These improprieties commenced in the first half of the 1990s. The improprieties ceased, as products began to be shipped with necessary tests conducted in accordance with the specifications on December 20, 2017.

(ii) Impact on quality

The test results on and after the test resumption on December 20, 2017 met the standards in the specifications agreed upon with specific customers with an adequate margin. Also, based on records of the manufacturing conditions at the time, it was judged that the molecular weight and molecular weight distribution of the products produced before this date were the same. Thus, it can be assumed that the omitted test items met the standards. Therefore, it is considered that standards were met during the time of improprieties, with no impact on quality due to the omission of test items. However, the investigation will continue to collect measurement data to improve reliability as the number of data verifications was low.

c. Other Improprieties identified by the In-house Investigation Report

In addition to the point in b. above, the In-house Investigation Report this time pointed to Other Improprieties involving Nylon, Polyimide film, s-BPDA, High-purity Chemicals, hydrogen peroxide water, and silica particles[129] among the improprieties referred to in Chapter 4.

d. Other cases of concern identified in the In-house Investigation Report

In addition to those described above in b. and c., the In-house Investigation Report identified three cases occurring at Ube Industries subsidiaries and one case at an affiliated company. Although these cases were deemed inappropriate, they were identified only as causes of concern to be shared internally[130] on such grounds as they only involved breaches of company regulations.

129 In a. (iii) above, cases involving Polyimide film and s-BPDA were described as one product.

130 The cases that The Committee deemed important fall on improprieties as defined above in Chapter 3 as a result of the investigation are included in Chapter 4 above.

The improprieties involving limestone aggregates at Ube Material were identified as one of such cases of concern.

2. In-house Polyethylene Investigation

(1) Overview

The In-house Investigation discovered the Polyethylene Case and other improprieties. Among these issues, the Polyethylene Case was assumed to be on-going, intentional and wide-ranging in effect. Therefore, Ube Industries determined that it is necessary to implement an in-house investigation, and the Emergency Task Force was established on December 27, 2017. The task force undertook the In-house Polyethylene Investigation as outlined below into improprieties involving the Polyethylene Case.

Investigation body	Emergency Task Force
Investigation period	January 25 – February 15, 2018
Investigation scope	Polyethylene products sold by UBE-Maruzen Polyethylene
Investigation method	Questionnaire survey and interviews of all successive officers and employees currently in service who are or were assigned to quality assurance for polyethylene products at the Chiba Petrochemical Factory at any level of the reporting line (factory managers, quality assurance group leaders, quality assurance team leaders, and quality assurance chiefs) and staff from production departments, development departments and sales departments, as well as confirmation of quality documents, rules and records related to quality assurance

(2) Findings of the investigation by the Emergency Taskforce

According to the Report on the Investigation of Quality Improprieties at UBE-Maruzen Polyethylene dated February 15, 2018 prepared by the Emergency Task Force, the findings of the In-house Polyethylene Investigation were as described below.[131]

(i) The improprieties involved entering arbitrary numerical values for test items for which actual testing was not conducted at the time of entering product test results into the rest record management system (operations management system[132] at the Chiba Petrochemical Factory.

(ii) It was determined that the improprieties had been usual practice since 1992 at the latest. The situation prior to that was not ascertained from interviews with currently serving staff because the persons directly involved had already retired.

(iii) The actors were the chiefs in charge of polyethylene product testing in the quality assurance team and

131 The investigation report also referred to corrective and preventative measures based on the investigation findings.
132 The name of the inspection record management system is not consistent in the Group. For example, it is called the "Operations Management System" at the Chiba Petrochemical Factory and the "Quality Control System" at some other production sites.

departmental staff directed by the chiefs. The team leaders of the quality assurance team, who were in the management position, were aware of but overlooked the improprieties.

(iv) The team leaders of quality assurance failed to recognize the seriousness, overlooked and neglected the improprieties. They neither reported the matter to their superior or the Environment, Safety and Quality Assurance Group Leader nor directed their subordinates to take corrective measures.

(v) It was deemed that the upper level management, including the factory general manager and the Environment, Safety and Quality Assurance Group Leaders, except for those who had served as team leaders of the quality assurance team, were neither involved in nor aware of the improprieties, that the improprieties were limited to the organization of the quality assurance team and below, and there was no systematic factory-level concealment of the matter. However, considering the circumstances that this improper situation had continued for at least 25 years, it must be said that senior-level management was non-existent for quality assurance in the operation of the Chiba Petrochemical Factory.

II. Verification Methods of In-house Investigation, etc.

1. Interviews of Staff

The Committee interviewed the following persons who were the officers and employees of the UBE Group responsible for carrying out the In-house Investigation to confirm the investigation methods.

Personnel[133]	Interview dates (2018)
Executive Officer in charge of the Environment & Safety Department	March 5, April 18
Product Safety Group Leader, Environment & Safety Department	March 19
Company President of the Chemicals Company	March 12
General Manager of the EHS and QA Department, Chemicals Company	March 5, 9, 27
Group Leader of the Chemicals Product Assurance Group, Chemicals Manufacturing Department, Ube Chemical Factory, Chemicals Factory	March 21
Product Safety Group Leader of the EHS and QA Department, Chemicals Company	March 19
Manager of the Quality Assurance Group, the EHS and QA Department, Chemicals Company	March 21
Company President of the Cement & Construction Materials Company	March 12
Group Leader of the Planning and Control Department, Cement & Construction Materials Company	March 12
General Manger of the Production Administration Department, Production & Technology Division, Cement & Construction Materials Company	March 12
General Manager of the Production & Technology Division, Cement & Construction Materials Company	March 27

[133] Positions are those used as of the date the interviews.

Representative Director of Ube Material Industries, Ltd.	March 27
Executive Officer in charge of the Construction Materials Division, Cement & Construction Materials Company	March 28
Executive Officer in charge of the Group Company Department, Cement & Construction Materials Company	March 28
Company President of the Machinery Company	March 9
General Manager of the Quality Assurance Department, Ube Machinery Corporation, Ltd.	March 9
General Manager of the Pharmaceutical Division	March 9
General Manager of the Pharma Quality Assurance Department, Pharmaceutical Division	March 9
General Manager of the Intellectual Property Department (former General Manager of the Planning & Management Department, Corporate Research & Development)	March 9
General Manager of the Energy & Environment Division	March 9
General Manager of the Engineering and Environment-Safety Department, Energy & Environment Division	March 9

2. Scrutiny of Relevant Materials

The Committee obtained and carefully examined relevant materials owned by Each Company/Division and the reports that Each Company/Division submitted to the Environment and Safety Department.

III. Verification Results

1. Differences between In-house Investigation and Investigation Results

(1) Improprieties not discovered or reported by In-house Investigation

The Investigation undertaken by The Committee discovered new improprieties that were not discovered or reported by the In-house Investigation, as described below.

Internal company/ Division	Corporation	Factory/ Plant	Improprieties revealed through	Product involved
Chemical	Ube Industries	Sakai	Questionnaire survey	Polyimide
Energy & Environment		Chiba	Questionnaire survey	Coal
Cement & Construction Materials	Ube Material		Questionnaire survey (also information received from customer)	HAP
			Questionnaire survey	FA Calcium Carbonate
				FA Magnesium Oxide
				Quicklime
				Slaked lime

				Calcium carbonate
				Dustproof solidification material
			Report from Ube Material and interviews	FA Ultra-high-purity Calcium Carbonate
			Interviews	Soil conditioner
		Mine	Interviews	Quicklime
	Tohoku Tekkosya	Ichinoseki	Report from Ube Material	Quicklime
				Slaked lime
				Calcium carbonate
Chemical	UBE EXSYMO	Fukushima	Questionnaire survey	UC fiber
		Gifu, Fukushima		Rasen compose

(2) Process leading to discovery of improprieties in (1)

a. Questionnaire survey

Through the First Questionnaire Survey detailed in Chapter 1, V. 5., The Committee discovered by March 23, 2018 improprieties (or the suggestion of their existence) involving Polyimide Film, Coal, HAP, FA Calcium Carbonate, FA Magnesium Oxide, Chiba Factory's quicklime, slaked lime and calcium carbonate, dust-proof solidification material, UC fiber, and spiral compose.

b. Investigation methods other than questionnaire

(a) Improprieties at Ube Material

On March 5, 2018, it was discovered due to a notification from a customer that the sulfate concentration of hydroxyapatite (HAP) produced by Ube Material did not meet the standard on the specifications. In response, Ube Material established an in-house investigation committee on March 23, and as a result of conducting another in-house investigation, it was reported that tests had not been conducted for three of the test items of HAP for some time, that some test items had not been conducted either for FA Calcium Carbonate and FA Magnesium Oxide, in addition to HAP, and that test results for Chiba Factory's quicklime, slaked lime, calcium carbonate, and dust-proof solidification material had been altered. It should be noted that The Committee recognized these improprieties occurring at Ube Material by the same date after obtaining 21 responses to the First Questionnaire Survey while Ube Industries and Ube Material reported these facts to The Committee only on receipt of the information from The Committee.

In addition, Ube Material discovered, as a result of its in-house investigation conducted in parallel with The Investigation, that two test items of FA Ultra-pure Calcium Carbonate manufactured at Chiba Factory had not been conducted. Upon receiving the report on the said in-house investigation, The Committee held interviews of the staff

of the Quality Management Office responsible for testing and discovered another test item had not been conducted.

During The Committee's May 2, 2018 interviews it was discovered that the Yamaguchi Sales Department, Calcia Division of Ube Material Industries, Ltd. reported during the In-house Investigation that the division had committed improprieties involving quicklime (calcium oxide) made in the Mine Factory in writing to the Administration Department of the division, engaged in summarizing the investigation at that time, and thus, from the said document, the improprieties involving quicklime at the Mine Factory came into light. The Committee later discovered that the Administration Department reported these improprieties to the Compliance Office of Ube Material, which was then responsible for summarizing the In-house Investigation, the general manager of the Compliance Office chose not to report this matter to Ube Industries after consulting with the then senior managing director of Ube Material.[134]

(b) Improprieties at Tohoku Tekkosya

Tohoku Tekkosya is a wholly owned subsidiary of Ube Material. Former factory managers and others of this company initially reported in the interviews of The Committee that there were no improprieties at Tohoku Tekkosya. When The Committee gave a prior notice that the Second Questionnaire Survey would be carried out from April 19, 2018, however, Ube Material stated to The Committee on April 12 before the implementation of the Second Survey that there had been improprieties involving the quicklime, slaked lime, and calcium carbonate manufactured by Tohoku Tekkosya.

2. Verification of In-house Investigation, etc.

This Committee made conclusions as set out below based on the verification of the validity and sufficiency of the In-house Investigation etc. carried out from February 21 to April 26, 2018.

(1) In-house Investigation

a. Comprehensiveness of investigation scope

The In-house Investigation did not include in the scope of investigation all the subsidiaries located overseas and companies that are second-tier subsidiaries and lower-ranked subsidiaries of Ube Industries, including Tohoku Tekkosya, as well as affiliated companies, with the exception of some companies, such as T&U Electronics Co., Ltd.

With regards to the exclusion of overseas-located subsidiaries, The Committee received the explanation from the Product Safety Group of the Environment and Safety Department that the reason was because these companies followed laws, regulations and business practices of their host countries. The Committee would not necessarily object to the view that the investigation in Japan was more important in consideration of overall priorities of the investigation. It is because the legal system differs in each jurisdiction, so verification of legal compliance in each

134 They determined that issuing the test report table by the Yamaguchi Sales Department was merely a breach of in-house regulations and not a quality issue.

territory quickly and with any certainty is generally more difficult and requires considerably more time than similar verification in Japan. Still, the original objective of the In-house Investigation was to verify the existence or non-existence of improprieties in the breach of laws and regulations, etc. regarding manufactured products. So, it is hardly possible to determine reasonably the exclusion of all overseas subsidiaries, particularly manufacturing companies, from the scope of investigation.

Also, second-tier and lower-ranked subsidiaries and affiliated companies of Ube Industries were excluded from the In-house Investigation simply because they have a less important relationship with Ube Industries than direct subsidiaries. In light of the above investigation objective, however, it is even less reasonable than the exclusion of overseas subsidiaries to exclude such lower-tier subsidiaries in Japan. In fact, considering the discovery of test result alteration at Tohoku Tekkosya, Ube Industries' second-tier subsidiary, it can be argued that there is a strong need to include these companies in the scope of investigation as well.

The Committee is compelled to determine the comprehensiveness of the scope of the In-house Investigation as being inadequate, because the investigation excluded companies located overseas and second-tier and lower-ranked subsidiaries and affiliated companies of Ube Industries, with the exception of some production sites, and also because the investigation was finished by only issuing an investigation report that failed to point to the need for supplementary investigations targeting the excluded companies (the In-house Polyethylene Investigation was the only in-house investigation additionally carried out).

b. Validity and sufficiency of investigation methods

(a) Inadequate interviews and survey questionnaires

As described above in 1. (1), the methods of investigation in the In-house Investigation were to be determined after consultation between Each Company/Division and the Environment and Safety Department, but the specific methods of investigation were primarily determined at the discretion of Each Company/Division, so the methods varied considerably from Company/Division to Company/Division.

In this regard, except for the Chemicals Company, no questionnaire surveys were conducted at Companies/Divisions, and no opportunities were established to hear about the existence or non-existence, etc. of issues involving product quality from staff responsible for quality assurance work.

It is believed that questionnaire surveys and interviews of staff responsible for quality assurance work should also have been held at other Companies/Divisions than the Chemicals Company. The reasons for this are that the questionnaire survey and interviews of employees implemented by the Chemicals Company discovered a number of improprieties; described above in III. 1. The Committee's interviews and questionnaire surveys actually revealed a number of improprieties committed at Companies/Divisions other than the Chemicals Company which were not revealed by the In-house Investigation; and it is generally understood that necessary and sufficient interviews and questionnaire surveys are quite effective and important for the investigation (or it is relatively difficult to realize an

effective investigation without conducting them).

Accordingly, as interviews and questionnaire surveys were not utilized, it is difficult to affirm that the investigation methods of the In-house Investigation were reasonable or sufficient.

(b) Absence of matching between raw data and values shown in test result tables

In a majority of checks in the In-house Investigation, comparison was made only between values recorded in the test results table and standard values indicated on specifications or the test results entered in the quality control system, and the test accuracy was determined based on the consistency of these values only.

However, The Investigation discovered cases in which the test results table had numerical values that were altered test results, and those in which the test results table had numerical values that were made up without actual testing. Therefore, in order to accurately verify the testing, it is important to crosscheck the records closest to the primary test results (hereinafter "Raw Data") from among the various existing test records with the values indicated in the test results tables to confirm the consistency of the values. In fact, in the improprieties involving HAP described above in 1. (2) b. (i), testing was not conducted for the prescribed test items, and fabricated test result values were entered in test results tables. In view of the nature of the such improprieties, it is reasonably supposed to be highly possible that if efforts had been made to crosscheck the test results table values with Raw Data, the non-existence of Raw Data would have been discovered and the fact that actual testing had not been conducted would have been confirmed.

Accordingly, the test results table values should be crosschecked with the Raw Data, except when the fabrication or alteration of test results on the system is physically impossible because test results are automatically transmitted on the system, test results tables are issued without human intervention and the said test results cannot be altered on the system. In conclusion, it is difficult to affirm that the In-house Investigation methods were reasonable or sufficient because of non-performance of this crosschecking.

(c) Non-verification of validity or reasonableness of quality assurance systems (inspection records management systems)

The In-house Investigation did not conduct any verification of the existence or non-existence of the possibility that the design or operation of quality assurance systems may cause, encourage or promote improprieties.

Specifically, quality assurance test results are managed by entering data into the inspection records management system, which is used by the UBE Group companies for the control of product inspection test results. This system is used to cross-check with specification standards and issue test results tables. Therefore, it is believed that, for the investigation into quality assurance-related improprieties, there was a strong need to investigate whether the mechanism or system operation may have helped cause, encourage or promote improprieties. (It is clear that, although improprieties had been found through other investigation than such system verification, there would be a

strong need for the said investigation for the examination into causes or preventative measures.)

However, as stated above, no such investigation was carried out in the In-house Investigation.

In this respect, it was confirmed, as a result of the in-house investigation conducted by the Chemicals Company and The Investigation into the improprieties of not conducting some test items prescribed by the specifications, the system had a function of entering certain values to designated test items,[135] and so it is clear that the said system caused, encouraged or promoted the improprieties. In view of this point, it can be said that investigation should have been conducted into the mechanism or operation of the inspection records management system in the In-house Investigation.

c. Validity of evaluation of investigation findings

Among the improprieties discovered by the In-house Investigation, there are cases in which improprieties were discovered in Ube Industries, and reported as minor problems but appropriate measures were not taken by Head Office divisions, because there were no product quality concerns, such as the improprieties involving contamination with Limestone Aggregate from Wrong Location that occurred at Ube Material.

Nevertheless, the improprieties involving limestone aggregate described above is a case with potential breaches of laws and regulations as well as official standards in the areas of product quality and labeling, etc., as described above in Chapter 3. Therefore, doubts remain about the judgement that this case should be treated as a minor case of concern.

Thus, in some cases included in the In-House Investigation, reasonable evaluation was not made concerning the investigation findings.

d. Summary

As discussed above, there are problems with the In-house Investigation because of the comprehensiveness of the scope of investigation, validity and sufficiency of the methods used for the investigation, and the validity in the evaluation of the investigation findings. Thus, The Committee is compelled to conclude that the In-house Investigation is not entirely reliable.

(2) In-house Polyethylene Investigation

The In-house Polyethylene Investigation conducted questionnaire surveys and interviews covering all successive officers and employees responsible for quality assurance for polyethylene products (only those currently in service) as well as conducting questionnaire surveys and interviews of some officers and employees in departments other than quality assurance, including development, manufacturing, sales and others. The questionnaire surveys were

135 The system was programmed so that random numbers (in polyethylene cases) or constants (in nylon cases) were shown for non-conducted tests.

conducted for a total of 20 subjects, and interviews for a total of 18 individuals. The investigation also cross-checked hand-written daily test reports (which were raw data) and the lists of test items prescribed in the specifications agreed upon with the customer to discover that some test items had not actually been conducted. Upon finding through the interviews that the Polyethylene Case was committed by means of an inspection records management system, actual inspections were made to verify the existence or non-existence and specific details of a system program to facilitate such improprieties. Based on these points, The Committee believes that it is reasonable to conclude that the investigation was adequate from the viewpoint of the investigation method used.

This Committee investigated related facts through scrutiny of information materials concerned, personnel interviews, onsite inspections, a digital forensic investigation, and questionnaire surveys. However, no improprieties were newly discovered other than those reported by the In-house Polyethylene Investigation.

The In-house Polyethylene Investigation findings on the impropriety details, circumstances, timing of commencement, actors, and people who were aware of the improprieties had no major discrepancies with those of The Committee, despite slight differences.

Such being the case, there were no problems that deserve special mention in the In-house Polyethylene Investigation from the viewpoint of the validity and sufficiency of the investigation methods.

IV. Committee's Recommendation for Supplementary Investigation and Actions Taken by Ube Industries

1. Recommendation for Supplementary Investigation (No. 1)

(1) Submission and details of recommendation

Based on the above problems concerning the In-house Investigation, etc., The Committee submitted a document "Status Report for the Results of Verification by the In-house Investigation and Recommendation for the Implementation of a Supplementary Investigation" dated April 26, 2018 to Ube Industries, proposing a supplementary investigation outlined below be planned and conducted.

a. Scope of supplementary investigation

Covering the products and businesses of the below-listed entities, in addition to those subject to the In-house Investigation, etc., the supplementary investigation should focus on the points described below in (2).

(i) Overseas manufacturing subsidiaries
(ii) Affiliated companies in which the UBE Group's equity interest is less than 50% but the Group substantially controls the management by sending officers and employees, and the degree of management control is high
(iii) Second-tier and lower subsidiaries of Ube Industries

b. Method of supplementary investigation

(i) Questionnaire surveys and interviews targeting staff who are responsibility for quality assurance

(ii) Cross-checking of test Raw Data with test results tables

(iii) Testing of stored or already tested samples and cross-checking of such test results with test results tables issued

(iv) Verification as to whether there are any issues involving the computer systems

(2) Details of supplementary investigation

Ube Industries conducted a supplementary investigation, as summarized below, in response to the recommendation as (1) above.

	Companies in Japan	Companies overseas
No. of Companies investigated	2	7
Investigation methods	(1) Questionnaire survey (staff involved in quality inspection and assurance) (2) Sampling survey (cross-checking of test results tables with Raw Data) (3) Interviews (4) Scrutiny of related documents	(1) Questionnaire survey (all staff involved in quality inspection and assurance) (2) Sampling survey (cross-checking of test results tables with Raw Data) (3) Interviews (4) Scrutiny of related documents
Investigation start	May 21, 2018	May 17, 2018
Time of summary of investigation findings	September 30, 2018. In the event that possible cases of improprieties are found, investigation will be extended until November 2, 2018, with findings to be summarized by November 31, 2018.	September 30, 2018. In the event that possible cases of improprieties are found, investigation will be extended until November 2, 2018, with findings to be summarized by November 31, 2018.

2. Recommendation for Supplementary Investigation (No. 2)

The digital forensic investigation conducted by This Committee discovered new e-mails and other information materials that suggested the possibility of improprieties. However, in view of the final report submission time limit, The Committee only requested in writing that a supplementary investigation be conducted by Ube Industries. Thereupon, as described above in Chapter 1, VI, 2. (4), The Committee submitted a document, “Response to ‘Request for Deadline for Receipt of Investigation Report’ and Recommendation for Implementation of Supplementary Investigation No. 2” dated May 9, 2018 to Ube Industries, recommending that Ube Industries implement a supplementary investigation into the abovementioned e-mails, etc.

In response to this recommendation, Ube Industries has been conducting the supplementary investigation as above, starting on May 11, 2018.

Chapter 6: Background of the Improprieties and Analysis of Causes

I. Introduction

As described above in Chapter 4, improprieties involving a number of UBE Group products have been confirmed by This Investigation. A majority of these improprieties were not problems of individual people. Rather, it can be termed characteristic that they were practiced continuously over many years with the involvement of many people through misconduct as a whole.

It is believed that the fundamental background and cause of such improprieties being practiced continuously over a number of years without any corrective action being taken and involving multiple products is that quality assurance work in the UBE Group was accorded a low rank relative to product development and manufacturing work. There has been a tendency to accord a low rank to quality assurance work in the UBE Group. In addition to this low ranking, it appears that there was a priority on deadline compliance, and required tests were omitted. This was due in part to overconfidence in manufacturing processes not creating any substantive problems with product quality and a shortage of personnel accompanying operational rationalization. Improprieties were practiced, including concealment of test results that did not meet specifications agreed upon with the customer and the making up of false values within the standards on test report tables.

In addition, after the in-house discovery of improprieties, action was neglected with no recognition of seriousness for quality assurance work as a whole. Even when action was ever taken, there were cases in which only in-house action was taken without informing the customers concerned about the improprieties. It is believed that such a "closed culture that does not disclose problems" at the UBE Group was one of the reasons why the multiple improprieties were never corrected over many years.

The background and causes of these improprieties are discussed below in II. through VI.

II. Problems with Awareness about Quality Assurance

1. Low Ranking of Quality Assurance Work

Quality assurance work is an important task to confirm through tests whether products have been manufactured to a quality that meets Official Standards or the standards on specifications agreed upon with the customer as well as to guarantee to customers that the delivered products meet those standards. However, even after improprieties were revealed, a number of officers and employees made comments stating such things as product quality issues would not arise if product development and production process management were adequate, or, since test results were stabilized, the absence of tests would be no problem. As clearly indicated by such comments, there seems to have been a strong focus on product development and production process management while quality assurance work was ranked relatively lower.

At Ube Industries, while environmental safety[136] has been treated as an important management issue and ongoing awareness-raising activities have been implemented for officers and employees, the proper implementation of quality assurance work has not been adequately recognized as an important management issue, and there have been no company-wide motivating activities on the issue. This point is clearly illustrated in comments of the management to the effect that although they exerted efforts in environmental safety, quality assurance was left to worksites.

Thus, in addition to the lower ranking of quality assurance work than product development and production, Ube Industries management did not adequately understand the proper implementation of quality assurance as an important management issue or communicate the significance and importance of quality assurance widely in the company thus far. It has been found that these points are part of the reason why the UBE Group has experienced a tendency to disregard quality assurance work and has a weak awareness of the importance of quality assurance.

Such tendencies and weak awareness can be identified as the fundamental background and cause of the improprieties involving multiple products at the UBE Group and their continuation over many years without being corrected. In other words, the majority of the improprieties identified in This Investigation were not practiced in secret by individual officers or employees but with the involvement of multiple officers and employees. And the improprieties were passed on among officers and employees over many years, and many of the actors and those who noticed the improprieties were acting in accordance with the instructions and directions from superiors and predecessors, and no one was aware that the improprieties were a serious issue. This is arguably evidence that the improprieties involving multiple products that occurred in the UBE Group and continued over many years without being corrected were due to the tendency to disregard quality assurance work and the weak awareness about the importance of quality assurance.

Some of the improprieties were especially serious, as in the following. The cases described above in Chapter 4, I. 3 (3) b (i) and 4. (3) b. (iv) were such that problems were reported by the leader of Quality Assurance Group 2 of the Ube Chemical Factory to the General Manager of the factory and the manager of the Polyimide and Functional Products Business Unit, and in response the said managers instructed corrections to be made. However, the improprieties were not corrected for reasons such as there were no problems in terms of quality and there had not actually been any complaints about quality from customers. On the other hand, as described in Chapter 4. III. 2. (3) c. (ii), the director sent from Ube Material to Tohoku Tekkosya was informed of the facts concerning the manipulation of test result table figures, but measures were not taken to correct the improprieties based on the belief that delivery could not be suspended since the fundamental problems could not be solved given that product quality stabilization was not easy, making it difficult to manufacture products that met the standards in the specifications agreed upon with the customer.

136 According to the Division of Duties Regulations of the Environment and Safety Department, “environmental safety” is a generic term encompassing industrial safety and health, security and disaster prevention, environmental conservation, product safety and global warming countermeasures.

Based on these facts, it can be observed again that the improprieties involving multiple products that occurred in the UBE Group and continued over many years without any corrective action being taken were due to the tendency to disregard quality assurance work and the weak awareness about the importance of quality assurance.

2. Excessive Compliance to Delivery Deadline with Disregard for Quality Assurance

Complying with the product delivery deadline established with the customer is normal corporate conduct and should not be blamed in itself.

Nevertheless, it has been confirmed that quality assurance was disregarded and Official Standards and the standards required in specifications were not followed just to comply with delivery deadlines and on the grounds that there are no substantial problems with product safety or quality. Instead, improprieties were committed by fabricating test results or altering test results that did not meet the specification standards without actually conducting tests for items that were originally required. These acts are a breach of the relevant laws and regulations and of the agreement with the customer and cannot be permitted even if there are no substantial problems with the safety and quality of the product.

Despite this, an excessive focus on compliance with delivery deadlines has been identified at the UBE Group together with a tendency to disregard quality assurance work simply because there are no substantial problems with product quality and safety. This fact is recognized as one of the reasons why multiple improprieties have been continuously practiced over many years.

Against this background of an excessive focus on compliance with delivery deadlines, it can be said that, when receiving difficult requirements regarding specification standards and delivery deadlines from customers, such requirements were easily accepted with a priority given on customer requests. On the other hand, quality assurance departments were in a very tight situation with regard to job burden, as a result of constant personnel shortages due to operational rationalization as well as an increase in the number of test-requiring products in conjunction with the increase in the total number of product lines handled by the UBE Group. Thus, there was not enough time to conduct testing in accordance with the regular test procedures (including retesting and manufacture of substitute products when test results had not met specification standards) stipulated on specifications.

In addition, under such circumstances, many testing staff made statements regarding compliance to supply time limits even resorting to improprieties that they did not want to inconvenience customers by stopping the product supply. Underlying this consciousness, it seems there was a sense that Ube would be deprived of the business by competitors unless it complied with the delivery deadline by making product delivery as requested by the customer.

3. Low Consciousness of Norms Related to Quality Assurance

At the UBE Group, disciplinary measures and other responses were not taken against individuals involved in past quality assurance improprieties. This fact further promoted the tendency to disregard quality assurance and a weak

awareness of the importance of quality assurance and is considered to be one of the reasons that lowered consciousness about norms related to quality assurance work.

The following cases can be observed as underlying this low consciousness of norms related to quality assurance work in the UBE Group.

It has been confirmed: (i) When a general breach of laws and regulations took place, the Compliance Committee discussed such matters as the causes, discipline against those involved, preventative measures, etc. following clarification of the case, but when a breach of laws, etc. involving quality assurance occurred, it was not even taken up as a subject for discussion at the Compliance Committee; (ii) According to the internal reporting records of the UBE Group, there were 44 internal reports in the past five years, indicating that the reporting system was working effectively to a certain degree, but there was not even one quality assurance case reported through this system; and (iii) As described above in Chapter 4, II. 4. (3) c. (ii), the improprieties involving quicklime at the Mine Factory had been repeatedly observed in internal audits, etc. by Ube Material auditors, but there seems to be no evidence indicating actual rectification measures were ever taken.

Furthermore, many of the UBE Group products reach consumers after being made into final products during the supply chain as raw materials for other products. So, it can be expected that the products will be tested during other companies' manufacturing process before the final product delivery to end consumers. On the other hand, it was rare for customer feedback to reach the UBE Group. These points are also considered as other causes that spurred the weak consciousness about norms related to quality assurance work.

Such factors suggest that the UBE Group lacked an awareness that quality assurance issues make up an aspect of compliance, and this is recognized as a cause for the multiple improprieties practiced continuously over many years.

4. Overconfidence in Quality Control in Production Processes

Concerning product safety issues or other problems subject to actual customer complaints, policies for taking action and specific measures to prevent problem recurrence were discussed at the Quality Control Committee or other bodies.

However, there were hardly any customer complaints originating from quality assurance improprieties, with a few exceptions. Thus, the company had no problems requiring responses to customers when improprieties were actually being committed continuously; then there was now even stronger overconfidence that production processes had no problems with quality control, suggesting that this was one of the causes that further spurred the weak awareness of the importance of quality assurance.

The overconfidence in quality control in production processes at the UBR Group ultimately led to overconfidence

in actual product quality, and it can be considered as part of the underlying background and cause for the multiple improprieties which were committed continuously over many years.

III. Inadequate Awareness of Compliance

1. Closed Culture That Does Not Reveal Problems

The UBE Group had a closed corporate culture leading to no disclosure of improprieties through trivialization of problems because of the fear about the discovery of past improprieties. It can be considered that this closed culture was in place behind the multiple improprieties practiced continuously over many years.

For example, among the improprieties involving quality assurance discovered in the past, there were some cases in which discussion and enforcement of fundamental solution measures were not enough, or other cases in which responses to customers were not made, while the improprieties were taken up just in a cursory fashion internally within the UBE Group.

When improprieties are discovered at all, it is required to rectify them and report the measures to the customer immediately, because the problem would lead to the supply of non-conformant products to Official Standards or the standards on specifications. If improprieties cannot easily be corrected, the rightful action will be to revise the supply agreement to make it conformant to Official Standards and standards in specifications by maintaining discussions with the customer, while even taking into consideration the suspension of product supply to the customer, as one possibility. Nevertheless, there were many cases in the UBE Group in which improprieties continued without being even reported to the customer concerned based on the company's self-justified interpretations of the significance of quality assurance. These interpretations included the idea that everything was OK so long as there was no problem with product safety and that reporting problems to customers could only bring about unnecessary confusion. Precisely because such interpretations were fostered internally or there was no entrenched culture of eliminating such interpretations, no measures aimed at a fundamental solution were implemented when improprieties were discovered within the UBE Group in the past.

During the process of The Investigation undertaken by The Committee, some employees made false reports to The Committee, concealed facts or changed their statements in the interviews on the improprieties.[137] It should be noted that all this suggests that the closed culture of concealing problems is deeply rooted at the UBE Group. Furthermore, as described above in Chapter 4, II. 6 (3), concerning some impropriety cases which legally required notification and application to a government agency, it took about six months from the identification of improprieties to actual reporting to the related government agency for consultations on corrective measures, while products non-conformant to laws and regulations continued to be delivered in the meantime. Such cases also suggest the presence of a closed culture that does not disclose problems.

137 From the digital forensic investigation, e-mails were discovered that were seemingly indicating false reports or concealment made as a result of discussion between those concerned in response to complaints from customers.

The existence of the corporate culture described above at the UBE Group is one of the causes of the multiple improprieties practiced continuously over many years.

2. Easy Reliance on Conventional Practice and Neglect and Inadequacy of In-house Rules

(1) Easy Reliance on Conventional Practice

Most of the testing staff in the quality assurance departments involved in improprieties followed test procedures just the way they had been taught to do by superiors or predecessors and made comments to the effect that they had not thought improprieties were a serious problem.

Many of them first did not have enough knowledge about testing and could not think of any problem when they were told about inappropriate testing methods.

Even in cases in which the related staff had some sense of compliance about testing methods, they finally came to have an incorrect understanding about quality issues, after receiving comments from their superiors or predecessors that the test results would be the same so the absence of testing was no problem, or the test results did not vary so entering a certain numerical value was not a problem.

Such easy reliance by quality assurance staff on conventional practice is also recognized as a factor in the multiple improprieties practiced continuously over many years without being corrected.[138]

(2) Neglect of in-house rules, etc.

As described above in Chapter 4, II. 3 (2) b. and (3) a, it is required to get the approval of the General Manager or Section Manager of the Quality Management Office for the issue of test results tables at UBE Group subsidiaries, as stipulated in in-house rules or because of structural design of the system. But there were some cases in which the issuing and approval processes of test results tables was a mere formality, such as testing staff making the approval by themselves using the ID, etc. of the person having approval authority. Furthermore, as described above in Chapter 4, I. 1 (3) c. (i), there were also some cases in which the handling procedures of managers' seals stipulated in in-house rules were not observed.

Such neglect of in-house quality assurance rules is also recognized as a cause of the multiple improprieties practiced continuously over many years.

IV. Problems Relating to Quality Assurance System

1. Lack of Independence, Vulnerability, etc. of Quality Assurance Departments

There was a tendency to disregard quality assurance work and a weak awareness of the importance of quality assurance at the UBE Group as described in II. 1. above. It is why the significance and importance of quality

138 Some of the on-site testing staff who were aware of the improprieties made statements to the effect that regular or temporary employees were not in a position to express views on company problems, and usually it was not possible to comment because, if they were to point out any problems, their own position at the company could be at risk.

assurance were not adequately recognized, and so there was no organizational independence ensured for the quality assurance departments. The main role of quality assurance is to confirm that delivered products meet Official Standards or specification standards through testing, and quality assurance departments should be in a position to suspend product shipment without hesitation if Official Standards or specification standards are not met, in spite of the intentions of production departments, including the Factory General Manager, compliance with delivery deadlines, or other circumstances. Nevertheless, in many UBE Group companies, the Quality Assurance Department was under the control of the Factory General Manager, or some subsidiaries positioned the quality assurance department under the control of the production department, and thus quality assurance departments were not positioned as independent. In addition, there were some cases in which the employee in charge of the quality assurance department concurrently held another production-related position, and thus organizational structure was designed without consideration given to the independence of the quality assurance department, or there was no clear division of duties between the quality assurance department and other departments.[139]

In addition, there were cases in which, although the Quality Assurance Department made improvement proposals, the Sales Department failed to respond, so the QA Department gave up making subsequent proposals, or in which the Sales Department had finally come to issue test results tables by itself in an effort to disregard the intentions of the QA Department, all this attesting to the vulnerability of the QA Department.

Such lack of independence and vulnerability of the Quality Assurance Department is also considered to be one of the factors that facilitated the multiple improprieties committed continuously over many years.

It should also be noted that the lack of communication between the QA Department and operating departments of product manufacturing, development and sales is also recognized as a factor in the multiple improprieties practiced continuously over many years without being corrected. For example, when the customer presents difficult requirements regarding specification standards, serious discussion should be held between QA and production, development and sales concerning the company's capacity to manufacture products to meet such requirements. But in reality, such discussion was not carried out sufficiently, and orders for products beyond the process capabilities were received. If the ordered products do not match process capabilities, all these departments should proceed with the endeavor of revising the specifications with the customer, but as this collaboration was inadequate, there were cases in which the specification remained unrevised. It is thought that such communication is insufficient just because the factory general managers had control over the QA Department, and so the mutual check function for each department did not work to engage in dialogue from their respective positions.

2. Personnel Shortages in Quality Assurance Departments

It has been found that the multiple quality assurance departments at the UBE Group had shortages of personnel.

139 The Quality Assurance Department at Ube Material is organizationally independent from the quality management offices carrying out QA work at each factory. However, there was no staff versed in quality assurance work (except for the General Manager of the QA Department, who concurrently serves as quality management office manager carrying out QA work in the factory), and the staff's main responsibilities (according to the Division of Duties Regulations and in the staff's understanding) consist of duties concerning ISO compliance and quality management system operations, but not quality assurance work.

The management stated that the reduction of personnel in the quality assurance departments could be attributed to factors such as advanced mechanization based on the development of testing equipment as well as appropriate reductions in test frequency due to improved process capabilities. On the other hand, however, in the interviews conducted by This Committee, a lot of QA Department staff made the following statements: i) although there were no major changes in annual production volume, the personnel in the quality assurance department were reduced; ii) it was difficult to get requests for human and physical investment through to indirect departments (like QA) due to the company's long-term deficits; and iii) there was a shortage of testing staff relative to the volume of work, a mindset was developed for reducing the burden of work by omitting tests, and there was little motivation for rectification, a situation that would even increase the burden of work. These statements were given on the assumption that the direct cause of the improprieties start was unknown because the improprieties had already been in place when they became involved in quality assurance duties. Based on these and other statements, the quality assurance departments were not able to secure adequate personnel to carry out the designated quality assurance work appropriately, although there were such factors as job mechanization and appropriate test frequency reduction. Of course it cannot be confirmed that the personnel shortage was the direct cause of the initiation of the improprieties.[140]

Accordingly, it can be recognized that the personnel shortage in quality assurance departments is as at least one factor that facilitated the multiple improprieties practiced continuously over many years.

V. Organizational Problems that Permitted Continuation of Improprieties

1. Audits, Education, and Immobility of Personnel

(1) No focus on quality assurance in internal audits or Corporate Auditor audits

In the UBE Group, internal audits related to quality covered only such superficial features as counting the number of incidents, classified into seriousness levels including serious complaints, complaints, quality problems, and customer requests. The internal audits were not conducted with the objective of verifying the existence or non-existence of improprieties by the cross-checking of raw data with test results tables for the confirmation of the test accuracy.

In the audits conducted by Ube Industries' Corporate Auditors, some quality assurance initiatives were listed as audit subjects, the number of such items was less than those for quality control or other areas. No audits with a specialized quality assurance theme were conducted.

It has been confirmed that, for these reasons, no internal audits or Corporate Auditor audits were adequately conducted with regard to quality assurance. The fact that quality assurance was not a focus in internal audits or Corporate Auditor audits is considered to be one of the factors that facilitated the multiple improprieties practiced

140 This point is further supported by statements made at the interviews of officers and employees that i) overtime work increased in the quality assurance department because they are now conducting all of the required work in laws and regulation and agreements with the customer after the discovery of the improprieties and ii) that the number of personnel in the department was increased because there was a personnel shortage.

continuously over many years without being corrected.

(2) Lack of in-house education about quality assurance

All officers and employees of the UBE Group companies receive e-learning sessions as part of the compliance education and training. These sessions include introduction of past case studies of problems such as improper accounting, sexual harassment, and power harassment. However, quality assurance-related subjects have barely been touched on in the in-house education sessions, leaving officers and employees without opportunities of acquiring knowledge or developing interest in and awareness about quality assurance through in-house education. It is considered that this lack of in-house education about quality assurance is one of the factors that facilitated the multiple improprieties practiced continuously over many years without being corrected.

(3) Immobility of personnel

In the UBE Group, personnel assignment was fixed to a considerable degree in quality assurance departments with hardly any employee rotations, and cases were often found in which the same testing staff conducted similar tests over many years. It is thought that this immobility in personnel assignment also as one of the factors contributing to the multiple improprieties practiced continuously over many years without being corrected.

2. Inadequacies in Inspection Record Management System That Allowed Improprieties

In quality assurance departments in the UBE Group, some of the test results were recorded into the inspection record management system by manual input by testing staff, rather than automatic data transmission. It was a situation in which improprieties could easily be committed, such as fabrication or alteration of test results.

In some cases, the inspection record management system had functions designed to automatically enter a random number or a value obtained by multiplying the actual test result by a certain coefficient as the test result, a system design for facilitation of data fabrication or alteration.

It is deemed that the introduction of such functions and their actual use for improprieties is one of the factors contributing to the multiple improprieties practiced continuously over many years.

Some companies of the UBE Group had a unique inspection record management system that was designed and constructed in each factory or for each product of the factory. Despite this, no group-wide monitoring or supervision was carried out to look for any problems with these systems from the quality assurance viewpoint. This can also be pointed to as background to the toleration of the aforementioned systems.

VI. Subsidiary Management Problems

Some of the improprieties practiced in the past by Ube Industries' subsidiaries were not reported to Ube Industries, the parent company. Specifically, there was a case in which an Ube Material employee reported improprieties and the reporting helped the company correct the improprieties by 2010 through the discontinuation of product sales

and other means, but Ube Material did not notify details of the impropriety in question to Ube Industries until the employee reported it to the parent company in 2014.

In addition, as described above in Chapter 4, II. 4 (3) c. (ii) and Chapter 6, II. 3., the improprieties involving quicklime occurring at the Mine Factory were pointed out repeatedly by the Ube Material auditor in in-house audits, and the matter was reported to the then Representative Director of Ube Material, but no information concerning the improprieties was given to Ube Industries.

Furthermore, one of the objectives in sending or transferring officers and employees of the parent company as officers of a subsidiary is to practice governance in the same way as, or in an equivalent way to, the parent company through such officers. But, as described above in Chapter 4, II. 4 (3) c. (ii) and Chapter 6, II. 3., the director seconded from Ube Material to Tohoku Tekkosya, while being aware of the matter, took no measures to correct improprieties because of his belief that at any rate, deliveries could not be stopped.

Based on the above, it is deemed that the subsidiary supervision functions did not work adequately in the UBE Group, and this is considered to be one of the factors contributing to the multiple improprieties practiced continuously over many years without being corrected at UBE Group subsidiaries, etc.

Chapter 7 Preventative Measures

I. Introduction

In this chapter, The Committee makes recommendations, as detailed in II. below, concerning the preventative measures to be taken by the UBE Group Committee in consideration of the background and causal analysis of the improprieties previously acknowledged in Chapter 6 (hereinafter referred to as "Committee Recommendations for Preventative Measures").

As previously detailed in Chapter 1, I., Ube Industries has established the attached Recurrence Prevention Measures Relating to Improprieties in Quality Checks, dated May 31, 2018, by conducting In-house Investigation, etc. in parallel with the investigation undertaken by The Committee (hereinafter, "Company's Recurrence Prevention Measures"), and has presented them to The Committee. The Committee has ultimately concluded that the Company's Recurrence Prevention Measures are in line with the Committee Recommendations for Preventative Measures and strongly recommends that they be implemented. The Committee also makes recommendations in II. 2. below regarding matters that should be added to the ultimate version of the Company's Recurrence Prevention Measures in order to improve the effectiveness of the preventative measures to be implemented within the UBE Group.

II. Committee Recommendations for Preventative Measures

1. Changing Management Attitudes on Quality Assurance

As detailed in Chapter 6, I. and Chapter 6, II. 1., we can identify the fact that quality assurance had been positioned as a lower priority within the UBE Group than operations such as product development and manufacturing as the fundamental background situation and cause of the fact that multiple product-related improprieties continued for many years without rectification. In order to fundamentally rectify the low priority given to quality assurance, management must demonstrate leadership to establish effective preventative measures for an underlying emphasis on quality assurance, make them a part of the UBE Group's corporate culture, and to steadily implement them.

When taking these preventative measures, it is paramount that the management seriously reflects on the fact that multiple improprieties were discovered through The Investigation and, also, reaffirms the significance and importance of quality assurance. Further, the management's direct communication of the significance and importance of quality assurance to all UBE Group officers and employees will lead to further improvements of the effectiveness of the preventative measures to be taken by the UBE Group. Accordingly, top management will need to regularly communicate the UBE Group's stance on quality assurance, as appropriate.

In addition, most of the UBE Group's products serve as the raw materials for other products, ending up in the hands of countless consumers, or otherwise affecting their lives, only after being turned into finished products somewhere in the supply chain. As a result, the Ube Group's products affect not just its direct customers, but vast numbers of stakeholders including consumers and secondary customers. In light of this fact, putting into practice a position

emphasizing quality assurance (including requiring any companies to whom the UBE Group companies outsource quality assurance to take the same position) while also extensively signaling this position to all parties concerned is another important means of rebuilding trust in the UBE Group.

To that point, many officers and employees indicated at the interviews conducted by The Committee that their awareness of quality assurance was lacking but seemed to take seriously the fact that multiple improprieties were discovered through The Investigation. Despite this, some among them made assertions along the lines of "as long as no safety issues have occurred, I do not see a problem if records for some inspection items not related to safety are wrong." Accordingly, as a prerequisite for taking preventative measures, the UBE Group needs to be sufficiently aware of the urgent need to change management attitudes on quality assurance, as their leadership will be needed to implement said measures.

The Company's Recurrence Prevention Measures are intended to change the attitudes of the management by, among other things, reaffirming its commitment to securing compliance with the understanding of quality as an important management issue, declaring that it will assume leadership in changing the corporate culture of the UBE Group, and expressing that it will undergo education given by external quality experts In addition, the Measures sets forth a policy of clearly demonstrating its quality-centered attitude both within and outside the UBE Group by formulating a Group Management Policy and continuously communicating messages from top management. In this way, the Company's Recurrence Prevention Measures, if appropriately implemented, are to be praised from the perspective of changing management attitudes on quality assurance.

Further, in consideration of the concerns brought up in the interviews detailed above and elsewhere, The Committee recommends that all members of management be made to fully understand these concerns. Also, appropriate discussions must be made regarding clarifying the responsibility of officers (e.g., voluntarily returning compensation) as well as disciplinary measures for officers and employees involved in improprieties.

2. Changing Employee Attitudes on the Importance of Quality Assurance and Compliance

As detailed in Chapter 6, II. 2., it has been recognized that, due to an excessive emphasis on meeting delivery dates, there was a tendency within the UBE Group to disregard quality assurance based on the reasoning that the products had no substantial safety or quality issues. It was also found that some production floor employees positioned quality assurance as a low priority. As detailed in Chapter 6, III. 1., there was a lack of awareness of compliance regarding quality assurance, and this included but is not limited to the existence within the UBE Group of a closed culture that did not allow problems to surface, trying to maintain past improprieties concealed or to trivialize these problems. Further, as detailed in Chapter 6, V. 1. (2), internal education within the UBE Group almost never covered matters related to quality assurance.

Consequently, moving forward there will be a need to thoroughly change employee attitudes regarding the importance of quality assurance and compliance by improving employee education focusing on quality assurance

and compliance. One way in which this will be done is through regular training regarding the significance and importance of quality assurance, as well as that of compliance, which includes compliance with relevant laws and ordinances, as well as with contracts with customers. Furthermore, as detailed in Chapter 6, Part II. 3., while it is confirmed that the UBE Group's internal reporting system functioned to some extent in itself, not a single internal report regarding quality assurance had ever been made. It seems the primary reason for this is a dulled normative awareness regarding quality assurance. As such, in addition to improving quality assurance and compliance education, there is also a need to sufficiently assure the effectiveness of the internal reporting system by ensuring that all employees are aware that quality assurance problems are included in the objectives of the internal reporting system.

On this point, the Company's Recurrence Prevention Measures aim to improve the company's quality assurance and compliance education, by planning and implementing quality assurance-related promotion activities, improving the quality education structure, reviewing the existing compliance activities and training, and continuing and repeating in-house education.

In light of the fact that most of the improprieties were discovered through the questionnaires conducted by The Committee, it is also important to create a system for the early detection of improprieties. Such a system could, for example, include conducting regular compliance questionnaires (explicitly including matters related to quality assurance) targeting, at a minimum, the quality assurance department.

3. Improvement of Quality Assurance System

(1) Increase of Quality Assurance Department Staffing

As detailed in Chapter 6, Part 4-2, it is confirmed that staffing shortages at the quality assurance department was one of the factors that allowed multiple improprieties to continue for many years. Accordingly, even if the attitudes of officers and employees are appropriately changed as detailed in 1. and 2. above, the likelihood that improprieties will reoccur will likely remain high. As such, there is a need to consider staffing increases at the quality assurance department as long as the staffing shortages at the quality assurance department are not resolved.

On that point, the Company's Recurrence Prevention Measures aim to make qualitative improvements to personnel through the systematic development of the human resources in charge of quality assurance. Providing the quality assurance department with human resources who have acquired sufficient knowledge and skill regarding matters such as the improvement of testing efficiency and quality assurance will prevent the harms that can occur when human resources who have not sufficiently acquired said skills and knowledge are assigned to the quality assurance department (e.g., when someone does not understand the significance and importance of conducting tests in accordance with Official Standards or specified in specifications due to a lack of sufficient knowledge regarding quality assurance, resulting in an inability to deter the occurrence of the same kind of improprieties.). As such, The Committee has high praise for the implementation of such initiatives, in and of itself.

At the same time, there is a need for a keen awareness of the importance of quantitative improvements like the quality assurance department staffing increases detailed above. Therefore, it is recommended that the quality assurance department conduct both qualitative improvement and quantitative expansion even further. Accordingly, there is a great need to keep in mind the importance of analyzing the necessity of the staffing increases at the Quality Management Department, as proposed in the Company's Recurrence Prevention Measures.

Further, managers of the Cement & Construction Materials Company have stated that in the future they will calculate the required number of staff members based on man-hours for all the necessary tests and make the staffing increases to make up for any personnel shortages, should they occur. It should be added that, even after staffing increases are made at the quality assurance department, continuous evaluation and improvement of the balance between the number of assigned personnel and the required man-hours is vital to preventing the reoccurrence of improprieties.

(2) Revision of the Organizational Framework

As detailed in Chapter 6, Part IV. 1., the factors that allowed multiple improprieties to continue for many years included an insufficient recognition within the UBE Group of the significance and importance of quality assurance, and the weak position and lack of independence of the quality assurance department within the organization, as well as a lack of communication between the quality assurance department and other operational departments. In reflection of this fact, there is a need to reaffirm the significance and positioning of the quality assurance departments within the UBE Group's organizational framework and promptly rebuild the organizational design and framework.

In other words, we must do the following three things: i) Make each quality assurance department independent from the operational sections in charge of the manufacture, development, or sales of products and then establish a section in charge of the cross-sectional management and auditing of the quality assurance departments of each Company/Division; ii) Guarantee, strengthen, and clarify in the division of duties the authorities of quality assurance departments in order for them to be able to perform their roles. For example, clearly state in the company regulations that the quality assurance department has the authority to suspend shipment of products that do not meet Official Standards or standards set forth in specifications; and iii) Construct a system framework that can assure opportunities for consultation and discussion on equal footing between the staff members of the quality assurance department and those from manufacturing, development, and sales departments of a variety of aspects, such as production capacity, process capacity, and the specifications demanded by customers.

On this point, the Company's Recurrence Prevention Measures are intended to assure the independence of QA departments, secure and strengthen their authority and also clarify the division of duties. Specific means consist of, among other things, enhancement of each internal company's quality management under the direction of the Head Office by placing a Director Responsible for Group Quality directly below the representative director and president of Ube Industries and establishment of a new Quality Management Department, as well as establishing a QA

management department directly below the heads of each internal company. Further, the plan also provides for the establishment of a new Group Quality Committee chaired by the representative director and president of Ube Industries so that quality assurance departments can perform their function of conducting cross-sectional management and auditing of each Company/Division. Other additional provisions include those clearly stating in the division of duties that the sales department's roles consist of exchanges between the operational departments and the production workshop and dealing with customers on behalf of the organization. While these measures can be praised because they are oriented in the same direction of the Committee Recommendations for Preventative Measures, putting them into affect will require a great depth of supervision from the representative director and president of Ube Industries and other management executives.

(3) Assuring the Effectiveness of Audits

As detailed in Chapter 6, V. 1. (1), it is confirmed that the UBE Group's internal audits and Corporate Auditors' audits did not sufficiently function in the area of quality assurance and furthermore that the fact that quality assurance was not a focus of these audits was one of the factors that allowed multiple improprieties to continue for many years. Consequently, the UBE Group must conduct audits intended to confirm the existence or non-existence of quality assurance-related improprieties by, for example, verifying the conformity of the actual tests performed with the specifications by cross-referencing the Raw Data with the figures on test reports in order to confirm the accuracy of test results.

On that point, the Company's Recurrence Prevention Measures provide for the establishment of a system for the Quality Management Department, as experts in the field of quality assurance, to conduct audits of quality assurance processes in order to supplement the Auditing Department audits. It is important that such audits be conducted for the purpose of confirming the existence or non-existence of improprieties as detailed above.

Further, the Company's Recurrence Prevention Measures stipulate that in the event some impropriety should occur, it shall be reported to the representative director and president of Ube Industries and the Group Quality Committee without delay, and that until it can be appropriately handled, the Director Responsible for Group Quality shall follow up on the case. In consideration of past cases in which auditors' recommendations had not been acted on, and assuming the production floor's slow action on making improvements, creating more effective systems must be considered, for example, conferring the Director Responsible for Group Quality not just with the authority to manage progress but also with the ability to give job orders for making improvements.

(4) Assuring Personnel Rotations

As detailed in Chapter 6, V. 1. (3), there is a tendency in the UBE Group that personnel assignments are fairly immobile, with little or no personnel rotations within the quality assurance department. In fact, there were occasional cases of employees being in charge of the same or similar tests for years on end. It is considered that this sort of immobilization of personnel assignment is one of the factors that caused multiple product-related improprieties to continue for many years without rectification. As such, moving forward it will be important to

form a strong foundation that prevents such maladaptive customs from taking root by conducting personnel rotations both with other departments and within the quality assurance department to the extent possible.

To that end, the Company's Recurrence Prevention Measures specifically state that personnel rotations will be conducted in a systematic manner. These measures, oriented in the same direction with the Committee Recommendations for Preventative Measures, are to be agreed to. That said, rotating personnel as a mere formality will not serve as an opportunity to mitigate or prevent improprieties if related officers and employees do not have an appropriate understanding of the significance and importance of quality assurance or a normative awareness regarding the subject. Quite the opposite, it has the undeniable potential to proliferate improprieties by allowing the entire staff to be influenced by officers and employees without a proper understanding or normative awareness regarding quality assurance. As such, as detailed in 1 and 2 above, there is also a need to change the attitudes of officers and employees. Further, as detailed in Chapter 6, IV. 1., it has been discovered through The Investigation that there were occasional cases of quality assurance department managers who were also serving in other manufacturing-related positions. It should be added that it is necessary to take sufficient caution to avoid hampering the assurance of the quality assurance department's independence and the assurance and strengthening of its authority when conducting personnel rotations.

4. Revising and Familiarizing Everyone with Company Regulations

As detailed in Chapter 6, III. 2., one of the factors that allowed multiple improprieties to continue for many years without rectification was the fact that quality assurance department staff in charge of testing had grown so reliant on customary practices that company regulations in this area were disregarded. In consideration of causes like this, preventing improprieties from occurring will require comprehensively and clearly stipulating the division of duties and compliance rules for quality assurance after studying current company regulations on quality assurance.[141] It will also require either revising the current company regulations or establishing new company regulations and then familiarizing all the relevant officers and employees with the regulations. Additionally, assuring the effectiveness of such company regulations will require first clearly stipulating in the regulations that individuals who engage in improprieties in violation of said regulations, or recognized said improprieties but failed to report them and the like, will be subject to strict disciplinary measures, and then reliably implementing said penalties when a problem actually occurs.

On that point, the Company's Recurrence Prevention Measures includes plans for revising quality assurance-related regulations, reviewing and revising the group division of duties rules, new preparation of the company's division of duties regulations, revising the quality assurance organization regulations, and other measures as part of "Reevaluating the Organizational Framework of Internal Companies." Of course, simply writing company regulations is no guarantee that they will function, so it is important to take measures to notify the revised or newly established regulations to everyone and specify as well as implement strict penalties for those who violate the

141 To give an example, in some of the impropriety cases that occurred, no regulations had any concrete provisions on how to handle non-conforming test results. Consequently, there is a need to consider explicitly specifying how to handle such situations (refer to Chapter 4, VI, 2. (3) above).

regulations as detailed above, under uniform and systematic rule management.

5. Promoting Awareness of Quality Assurance in Receiving Orders and Handling Customers

As detailed in Chapter 6 II. 2., it is confirmed that, due to an excessive emphasis on meeting delivery dates, there was a tendency within the UBE Group to disregard quality assurance based on the excuse that the products had no substantial safety or quality issues. And in some cases, contracts would be signed with customers although it would be difficult to complete the tests called for in the specifications. It is thought that this low awareness of quality assurance in the contracting process as seen in cases like these is one of the factors that allowed multiple improprieties to continue for many years. Consequently, the first step to reducing motives to engage in improprieties in the future is to create a new business structure, in which quality assurance staff communicate closely with their counterparts in the operational departments such as manufacturing, development, and sales and contracts are only signed after it is confirmed that process capability and testing methods are sustainably deliverable. It may be possible that continuous compliance with the specifications, delivery dates, or other conditions of current contracts is clearly infeasible. Or, alternatively, specifications, delivery dates, and other conditions of contracts to be newly signed in the future may need to be reviewed due to after-the-fact changes to process capability or inspection methods that are made for some reason. In cases like these, only the orthodox solution should be followed to explain the actual situation to the customer in a timely manner, and consult with them about changes to specifications, delivery dates, etc.

Further, it must be assured that everyone in the company has a shared awareness that quality assurance has priority over meeting delivery dates. Not only that, this awareness must also be shared with the customer. Friendly customer relationships should be built in which explanation can be given to customers when there will be delays to delivery dates because the necessary tests cannot be finished on time, and discussions should be held with them on such issues to seek their understanding.

On that point, the Company's Recurrence Prevention Measures mentions that customers were sometimes not provided with all the information they needed, and so improving the situation will be addressed on an organizational level by specifying the improvement of customer communications and regular reviews of specifications as the role of the sales department in the division of duties regulations. As such, The Committee appreciates the awareness of the problem and the direction taken, and consequently it recommends that these measures be reliably implemented.

However, the above steps cannot be taken within the UBE Group only, as it requires gaining the customers' understanding. It can be understood as not so easy to explain a situation like the ones detailed above to the customer, consult with them, and gain their understanding. It should be remembered, however, that if acquiescing to the customer's every demand results in the reoccurrence of quality assurance-related improprieties, there will be a great danger of eventually losing the customer's trust.

As most of the UBE Group's products serve as the raw materials for some other finished product, it must be recognized that quality problems with the UBE Group's products do not just become quality problems for the products of the UBE Group's customers; they can also negatively affect the consumers who use final products made with the UBE Group's products. As such, while it is understandable to take a stance of striving to meet customers' demands, from time to time a customer's demands can be infeasible. In cases like these, there is a limit to what can be achieved purely through the UBE Group's sole efforts. As such, in consideration of the above points, it must be added once again that it is vital to strive on a day-to-day basis to build a relationship with the customer in which the UBE Group can seek their understanding for a course of action that prioritizes quality assurance.

6. Improvement of Inspection Record Management System

As detailed in Chapter 6, V. 2., the UBE Group were using a testing record management system which made it easy to engage in improprieties involving the fabrication or manipulation of quality-related testing results. In the case of some of these improprieties, the inspection record management system had functions designed to automatically enter a random number or a value obtained by multiplying the actual test result by a certain coefficient as the test result, in order to make it easy to fabricate or manipulate test results. It can be recognized that such problems with inspection record management systems that facilitated improprieties are one of the factors that allowed multiple improprieties to continue for many years. Consequently, the UBE Group as a whole will need to uniformly promote a transition to inspection record management systems with which the fabrication or manipulation of test results is physically impossible, such as by automating processes of sending test results or putting them in test reports to the maximum extent possible in order to minimize opportunities for human intervention. Where automated data handing is difficult and human intervention is required through manual inputs, there will be a need to redesign procedural methods, such as assigning multiple individuals for test result checking or taking photographic evidence of testing processes and results.

The clarification of these issues should be included in the revision of current company regulations or the establishment of new company regulations, as detailed in 4. above. Furthermore, when company regulations are revised, or new ones are created, there will be a need to familiarize all relevant officers and employees with regulation details.

On that that point, the Company's Recurrence Prevention Measures that include plans to develop and gradually implement uniform IoT-based infrastructure on a group-wide basis have received high evaluation, based on the understanding that the existing inspection record management systems individually developed for each factory or each product had become a hotbed for improprieties.

7. Strengthening the Supervisory Function of the Head Office Departments and Parent Companies

As detailed in Chapter 6, VI., it can be recognized that the Ube Industries did not sufficiently perform its function within the UBE Group as a supervisor of subsidiaries and that this was a factor that allowed multiple improprieties

to continue at Ube Industries' subsidiaries for many years without rectification.

It can also be surmised that a similar situation existed within Ube Industries between the Head Office departments and Each Company/Division.[142] In other words, The Investigation showed a clear tendency within the UBE Group to respect the independence of internal companies, as well as that of individual factories within each internal company. On the other hand, personnel assignment was handled within the individual factories, so the Head Office departments were not aware of the staffing shortages occurring in quality assurance departments. Furthermore, the inspection record management systems used at each factory of the UBE Group were not uniformly supervised by the Head Office departments. These factors eventually created a system that allowed improprieties to occur without the Head Office departments' knowledge about them. In this way, the failure of Head Office departments to sufficiently perform their supervisory function was another factor that allowed improprieties to continue for many years.

Accordingly, from the standpoint of assuring the supervisory function of the parent company and the Head Office departments over subsidiaries and internal companies, respectively, there is a need to create a governance system that conforms to a uniform policy established by the UBE Group, while also respecting the independence of said subsidiaries or internal companies.

To that end, the Company's Recurrence Prevention Measures includes plans for rebuilding operational structures to enable internal companies to exert control and strengthening internal companies' oversight over the validity the quality-related operations by the Group companies that they oversee. They also include measures such as placing a Director Responsible for Group Quality directly under the representative director and president of Ube Industries and establishing a new Quality Management Department, measures which are intended to strengthen the Group's overall control of quality governance activities, strengthen each internal company's control over quality-related activities, and facilitate the implementation of risk assessments throughout the company. These measures are to be praised, together with the new direction and objectives toward which they are oriented.

Furthermore, when the Head Office departments should have been managing assignments of employees by ascertaining the required number of man-hours for the work volume to be done, it actually did so in reverse, by ascertaining the required man-hours from recorded overtime work results. This situation helped to escape from an opportunity to discover improprieties. In reflection on this, after the operational structures are rebuilt, the Head Office departments need to continually conduct oversight of personnel assignment at factories by managing personnel assignments based on an understanding the number of man-hours actually required.

142 Ube Industries is an internal company-based organization, and the relationship between the Head Office departments and internal companies referred to here is that between the head office functions and the individual internal companies within the company. It is distinct from the relationship between Ube Industries and individual subsidiaries/affiliates in the UBE Group.

Chapter 8 Conclusion

Each of the quality assurance-related improprieties confirmed through The Investigation were left to continue for so many years, and improprieties were confirmed to have occurred involving so many of the UBE Group's products, and these facts are such serious problems that the stakeholders' trust on the UBE Group has been lost.

Japanese manufacturing, backed by the strong technical prowess, employee diligence, and high ethical standards facilitated by lifetime employment, is said to have been a key driver of Japan's rapid post-war growth. It is extremely regrettable that such improprieties occurred for so many years without rectification within the UBE Group, which played a major role in this growth.

In order to restore trust in the UBE Group, it is imperative to accomplish the supplementary investigations recommended by The Committee as well as to tackle in a serious manner the Company's Recurrence Prevention Measures, including the efforts to change management attitudes on quality assurance.

The Committee sincerely hopes that the UBE Group will take this problem as an opportunity to clean house and achieve new growth with "wings of technology and a heart of innovation" backed up by reliable quality assurance and compliance.