Activity Report of the Study Group for the Advancement of Yokkaichi Complex (October 2020)

I. Activities of the Regulation Review Subcommittee

Chairman	JSR Corporation	Participating companies	13 companies out of 15 member companies of this study group

1. Streamlining regulations by introducing new methods

(1) Utilization of new technologies such as drones

[Current status]

- Companies in the city that have flown drones on their premises: Cosmo Oil, JERA, Showa Yokkaichi Sekiyu, and JSR
- The Yokkaichi City Fire Department conducted test flights on the premises of nine companies, including an area over a crude oil tank under an open inspection, with the department's own drones. The test flights were also conducted over hazardous material storage yards and outdoor tank yards.
- The Yokkaichi City Fire Department has developed operational guidelines for drone flights at the complex, including hazardous material areas (effective as of May 1, 2019).
- JSR Corporation conducted test flights over hazardous material facilities with its own drones. Shooting of the facilities by an infrared camera, which can provide normal images and also visualize surface temperature, was conducted.

Drone flights

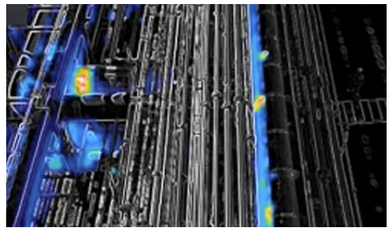

Image of the infrared camera

A drone of the Fire Department

(2) Utilization of new technologies such as IoT (utilization of non-explosion-proof equipment)

[Current status]

- The Fire and Disaster Management Agency announced its official view on the use of non-explosion-proof-type portable electronic devices at refueling sites through its notice dated August 2, 2018.
- The Yokkaichi City Fire Department developed guidelines on the use of non-explosion-proof-type portable electronic devices at manufacturing sites or the like (effective as of May 1, 2019).
- In accordance with the above guidelines, companies are proceeding with the revision of their preventive regulations to introduce non-explosion-proof-type portable electronic devices (tablet PCs, vital sensors, smart glasses, etc.).

2. Streamlining environmental regulations

(1) Review of the green space ratio on the premises as obligated by the Factory Location Act
(2) Improvement of the detailed rules for operating the Pollution Prevention Agreement
(3) Review of the Soil Contamination Countermeasures Act and related prefectural ordinances (Regulatory values that are stipulated in the current regulations but are not publicly known and not supported by any logical rationale will be corrected (streamlined) to reasonable values.)

Regarding (1), the green space ratio and the environmental facility ratio on the premises in industrial/exclusive industrial districts were revised to 10% or over and 15% or over, respectively, through the establishment of municipal rules (effective as of April 1, 2020).

Regarding (2), it has been decided to implement regular discussions with the Environmental Protection Division of Yokkaichi City (the governing body) and continue making efforts to review detailed rules for operating the Pollution Prevention Agreement.

Regarding (3), it has been decided to put a freeze on the activities since advantages to be gained by reviewing prefectural ordinances were not specified.

3. Streamlining response to regulations on industrial waste disposal

Regarding the on-site audits of industrial waste disposal sites and contractors obligated by a prefectural ordinance, we will visualize the contents of the audits conducted by individual companies, including assured conditions, so that member companies can share on-site audits and improve operational efficiency (streamlining) by eliminating the audits conducted by individual companies. To share on-site audits among its member companies, the Yokkaichi Regional Environmental Measure Council has started the development of rules for securing responsibilities of industrial waste dischargers in its newly launched special subcommittee on industrial waste. After the rules are established, discussions with the Waste Management Bureau of the Mie Prefectural Government will be started to obtain approval for sharing on-side audits.

II. Activities of the Inter-Company Collaboration Subcommittee

(Suspended since FY2019)

Chairman	Cosmo Oil Co., Ltd.	Participating companies	12 companies out of 15 member companies of this study group

1. Sharing products, raw materials, services, etc.

(1) Regarding toluene, xylene, and hydrogen, which are products for some and raw materials for others, we will offer a matching service between companies that have surplus products and companies that need them for the purpose of capital investment or cost reduction. ➜ Discussions are ongoing between related companies.
(2) To improve the efficiency of work conducted by using aged equipment, collaborative work between companies is being considered.

2. Education and training

(1) Sharing information of each company's educational facilities and utilization of shared information were discussed.
(2) The human resources development program for chemical and process industries (a program commissioned by Yokkaichi City) was continuously implemented.
(3) An IoT-focused training course in the city to develop human resources for plant operation and security was conducted. (Free demonstration course)
Fifty-one people from 21 companies participated in the two-day course on February 19 and 20, 2019.
(4) A digital-technology-focused training course in the city to develop human resources for plant operation and security was conducted. (Paid course)
Thirty-two people from 18 companies participated in the three-day course on January 31, February 7, and 14, 2020.

Training course in 2019

Training course in 2020

III. Other activities

1. Implementation of study meetings

Regarding the new theme, establishment of a subcommittee was not conducted. However, based on the results of questionnaires distributed to member companies of this study group, study meetings on IoT and digital-related topics were held, inviting lecturers from two IT-related companies. A total of 33 people from all of the 15 member companies participated in the meetings.

Date : Friday, October 18, 2020
Theme 1: "Smart fieldwork: Video communication and data visualization, and development of wireless infrastructure such as Wi-Fi and LoRa"
Theme 2: "Data analysis and utilization in the era of AI and IoT"

2. Launch of a website

A website of the Study Group for the Advancement of Yokkaichi Complex was launched to share its outcomes widely. The results will be frequently updated.
URL: https://www.yokkaichikonbinato-senshinka.jp

[Greetings (Chairman Hirano)]

I am So Hirano from Seijo University, serving as Chairman of the Study Group for the Advancement of Yokkaichi Complex.

I specialize in business history, in particular the history of the heavy chemical industry, such as chemical and oil businesses, and of industrial complexes. Taking advantage of my expertise based on historical perspectives, I have been engaged in projects to enhance the competitiveness of complexes. In addition to the Yokkaichi Complex, I also work for the Kashima Complex (Conference for the Enhancement of Competitiveness of the Kashima Coastal Industrial Zone) and the Keihin Complex (Kawasaki Waterfront Division Revitalization Promotion Council), as well as for the Petroleum and Natural Gas Subcommittee, Natural Resources and Fuel Committee, Advisory Committee for Natural Resources and Energy in the Ministry of Economy, Trade and Industry. I am determined to work with you to contribute to the realization of the advancement of the Yokkaichi Complex, taking into consideration the industrial policies of the national government and each region.

In recent years, the environment surrounding complexes has not been calm. However, overviewing the shipment and value added in manufacturing, we can say that complexes in Japan have maintained their competitiveness. Meanwhile, they are also facing various problems, such as intensified competition caused by emerging countries that are becoming more competitive, aging facilities, difficulties related to skill transfer, and reduction of greenhouse effect gas emissions. When we consider the risk of global supply chain disruptions, maintenance of domestic production is also a vital policy issue. Under such circumstances, enhancement of inter-company collaboration is an essential measure to maintain and increase the competitiveness of the complexes.

The Study Group for the Advancement of Yokkaichi Complex considers the challenges of each company as the challenges of the entire complex, discusses them with the involvement of governments, and takes actions to resolve them. The excellent feature of this study group is its operation based on the proactive discussions by the companies, which is steadily supported by the governments. The companies and governments autonomously work closely together to strengthen their competitiveness and continue to challenge themselves. The study group designs a road map to be addressed by each company in each fiscal year, and the progress is shared among its member companies; this is another point about this study group that attracts me.

The important topics for the future development of the complex are “IoT, hydrogen, and regional cooperation.” On the occasion of the introduction of IoT and big data analysis technology, cooperation and information sharing among companies at the complex will accelerate the accumulation of knowledge and technology, eventually leading to the enhancement of competitiveness. Moreover, utilization of hydrogen, a CO_2-free energy source, is also an important perspective when considering corporate initiatives toward a sustainable society, where business activities and development are continuously conducted while conserving the global environment.
However, there are many unresolved challenges regarding utilization of hydrogen, including the transportation cost, infrastructure development cost under legal regulations, and discovery and expansion of consumers. While it is difficult to resolve such challenges by the effort of a sole company, we need to overcome them with inter-company collaboration and governmental support. The last topic, regional cooperation, has already been in progress in the field of human resources development within the Yokkaichi Complex and other complexes. Knowledge sharing and other forms of regional cooperation will play a greater role in the introduction of IoT and big data and for the realization of a hydrogen economy in years to come.

In closing, I would like to express my sincere hope that the activities of the Study Group for the Advancement of Yokkaichi Complex will help realize more productive and safer businesses, which will lead to the enhancement of competitiveness of the Yokkaichi Complex and regional development as well as the revitalization of industrial complexes across Japan.

So Hirano
Chairman of the Study Group for the Advancement of Yokkaichi Complex