

ENVIRONMENTAL REPORT

2009



Message

Message from the President Japan Pharmaceutical Manufacturers Association



Takashi Shoda
President,
Japan Pharmaceutical
Manufacturers Association

The Japan Pharmaceutical Manufacturers Association (JPMA) aims to improve the health and welfare of the people of the world through research and development of pharmaceutical products used by medical services such as hospitals and clinics. JPMA, established in 1968, is a body of 69 (as of July 1, 2009) research and development focused pharmaceutical manufacturers. Our focus has been to 'Realize patient-centered healthcare', through our actions for a better understanding of pharmaceuticals and policy lobbying for the healthy development of the pharmaceutical industry.

JPMA, as a member organization of the International Federation of Pharmaceutical Manufacturers & Associations, takes action to address various global healthcare and/or pharmaceutical issues and implements global action in coordination with relevant organizations. For Japanese pharmaceutical manufacturers to expand into the global market and raise their international profile, I believe that our international collaboration and proactive action in dealing with global issues will become even more important. As businesses, we are required to act beyond the pursuit of 'financial' interests, to take action to deal with the global 'environment' issues, to ensure the health and safety of our workers, and to actively to accept our responsibilities regarding 'societal' issues. In other words, we will have to fulfill our 'corporate social responsibility (CSR)'. For this purpose, JPMA emphasizes the triple bottom-line, the 'Economy', 'Environment' and 'Society', and, in particular, endeavors to achieve 'sustainable development' that is demanded of industries.

The JPMA 'Charter for Good Corporate Conduct' was instituted in 1997. In 2001, "Compliance Program Guidelines" to facilitate the implementation of this charter were published. By ensuring that each member company is fully aware of the guidelines and has become familiar with them, JPMA has endeavored to maintain corporate ethics and strict observation of the compliance. 'JPMA Charter for Good Corporate Conduct', which identifies action to address 'global environment issues' being a high priority for the industry's 'sustainable development' for 'global sustainability'.

The current fiscal year, ending March 2010, is the second year of the first pledged period under the Kyoto Protocol (five years from FY2008 to FY2012). There have been major changes in Japan involving the global warming issue. Especially fresh in our memories was the statement by the newly elected Prime Minister, Yukio Hatoyama, at the United Nations Summit on Climate Change, "For its mid-term goal, Japan will aim to reduce its emissions by 25% by 2020 compared to the 1990 level, consistent with what the science calls for in order to halt global warming ... is a public pledge that we made..." On the one hand his statement has been praised by the international society, on the other hand, however, it has greatly confused domestic industries. Though I do believe it is the society's demand for business to take the initiative with regard to action to reduce greenhouse gas emissions.

In partnership with the Federation of Pharmaceutical Manufacturers' Associations of JAPAN (FPMAJ) we have implemented the follow-up action on the Japan Business Federation (Nippon Keidanren) Voluntary Action Plan on the Environment. We have endeavored to reach the target, "to control total CO₂ emissions from pharmaceutical manufacturers in FY2010 (mean level of the first 5-year pledged period under the Kyoto Protocol) below that of the baseline level in FY1990", as we recognize that prevention of global warming as the highest priority in our actions for fulfilling our CSR and for protecting the environment. Although an activation of research and development and the demand for revitalizing productivity has prevented us from achieving the target, we have implemented various measures to reduce greenhouse gas emissions such as the use of alternative fuels and energy sources among our member companies. As a result, the total CO₂ emissions from the JPMA membership in FY2008 are about 7% more than the 1990 benchmark. In comparison with the achievement in the previous fiscal year (of 28% more), it was an improvement that came within the reach of attaining the target. However, even if these measures are continuously implemented, attainment of the target is still difficult. I think we will need to consider comprehensive measures for the future, including taking into account emissions trading. While performing a fresh analysis of the current situation, we will enlist the JPMA members in further endeavors towards more proactive concrete action in order to attain the target.

JPMA aims to make the pharmaceutical industry into 'an industry that contributes to health and medical care services worldwide' and 'a visible industry'. For these purposes, JPMA is engaged in proposing policies to the concerned ministries and conducts proactive public communication activities to make 'patient-centered healthcare' a reality. As a part of this aspect of our action, we work hard to improve our communication with the society through the preparation and publication of the JPMA 'Environmental Report' and through discussions with external parties. We will continue to promote the disclosure of environmental, safety and health related information, as a part of our efforts to facilitate reciprocal communication between JPMA and the stakeholders. We welcome your candid feedback and opinions regarding this publication and the matters discussed in it. Thank you for your understanding and support.

Message from the Chairman, Environment and Safety Committee



Michio Sato
Chairman,
Environment & Safety
Committee

The birth of the Democratic Party of Japan regime in September 2009 has heralded major changes in our political and societal landscape. The changes are particularly marked in environmental policies, especially measures to deal with the global warming. On the formation of his new cabinet, Prime Minister Hatoyama published his basic principle by clearly stating, "Japan will contribute to the well-being of the international community through not only activities in the economic field but also those in the areas of the environment, peace, culture, science and technology, creating a country that is trusted by the international community." Immediately following this statement, he committed Japan "to reduce greenhouse gas emissions by 25% by 2020 compared to the 1990 level", which received international praise. While domestic industries initially expressed their concerns KEIZAI DOYUKAI (Japan Association of Corporate Executives) offered strong support "to cooperate as much as we, the DOYUKAI, can". The national survey of public sentiment conducted by Asahi Shimbun Newspaper in October found that 72% of respondents said they support PM Hatoyama's promise "to reduce greenhouse gas emissions by 25%". This indicates the trend of support spreading throughout the country.

The Prime Minister also clearly stated that the government will introduce a domestic emissions trading scheme, a scheme to purchase renewable energy supplies at fixed prices and an environment tax as means to attain the target. A domestic emission trading scheme is highly likely to be fully introduced as early as during FY2011, well within the first pledged period under the Kyoto Protocol. It can be said that the implementation of initiatives to reduce greenhouse gas emissions is indeed strongly demanded of business by the society.

In order to address these issues, JPMA established an Environment Committee in 1996. Since 2002, the Committee's role has also involved occupational safety and health related matters, and the name has been changed to the Environment and Safety Committee. We have developed our own voluntary action plans to implement measures for energy saving/global warming prevention, resources conservation, waste management, as well as for controlling atmospheric emissions of harmful pollutants. With regard to our voluntary action plan for resources conservation and waste management, we are well on target. Our targets for the total volume of waste for final disposal, the final disposal rate and the amount of waste generation have already been achieved since FY2005, with the expectation that the final targets will be achieved in FY2010. Our voluntary action plan to reduce atmospheric emissions of harmful pollutants has been implemented in three stages since FY1997. The reduction rate from stage one to stage three was 88% for dichloromethane, 99% for 1,2-dichloroethane and 78% for chloroform, with the final targets for FY2007 all attained and complete. Concerning energy savings and measures against global warming, our target was set to "control total CO₂ emissions from pharmaceutical manufacturers in FY2010 (mean level of the first 5 year pledged period under the Kyoto Protocol) below that of the baseline level of FY1990." Although the total CO₂ emissions from our member pharmaceutical manufacturers in FY2008 was 1,767,000 tons, exceeding the target by 115,000 tons, it is 84% of that of the previous fiscal year with a reduction of 347,000 tons of emissions, indicating a considerable improvement and major efforts by the respective member companies. Though it still appears to be difficult to attain the target, we will continue our efforts to adequately fulfill the pharmaceutical industry's social responsibilities.

Our actions with regard to occupational safety and health include studies on matters of great interest to the member companies and feedback on the outcomes, as well as the distribution of case studies on occupational incidents and their countermeasures. In FY2008 frequency rate of a worker being injured or killed in an occupational incident was 0.86 among the member companies, which shows that improvement has been made every year when looking at the rate of 1.01 in FY2007 and 1.22 in FY2006. We intend to continue taking similar action in the future to improve the level of occupational safety and health in the member companies.

There are many other issues that correspondence is requested as the pharmaceutical industry. For example, with "the 10th Conference of the Parties (COP 10) to the Convention on Biological Diversity" being held in Nagoya in October 2010, the development of "Business Activities Guidelines for Biological Diversity" has recently attracted considerable attention. Other issues include the proper disposal of general medical waste and measures to the environmental impact of pharmaceuticals. These issues can only be resolved when we collaborate with other JPMA committees and external bodies. The Environment and Safety Committee intends to communicate actively with many concerned parties, deepen our mutual understanding and make progress in the situation as much as possible.

As a means of enabling a range of stakeholders to understand our activities, we prepare and publish an Environment Report annually since 1999. This issue, 'Environmental Report 2009' is the eleventh. Through this annual publication, we aim to facilitate more reciprocal communication with our stakeholders and gain better mutual understanding. To achieve this goal, we will continue our efforts and would like to become a trusted pharmaceutical industry.

Period / Scope of this Report, Editorial Policy, Table of Contents

Editorial Policy

The purpose for publishing this Environmental Report is the dissemination of information about actions taken by the Environment & Safety Committee of the Japan Pharmaceutical Manufacturers Association, to the respective member companies, and society in general. The Environmental Report contains articles about the progress of and relevant activities conducted towards the Action Plan adopted by the Environment & Safety Committee General Assembly. The information used in these articles is collated from reports submitted by respective member companies or provided by those supported committee's actions. Information collection and analyses are conducted by the respective Expert Subcommittee and collated and/or summarized at the Steering Committee. The editor hopes this Environmental Report will be positively reviewed by our respective member companies and by society, and used effectively as a communication tool.

Scope and Period of this Report

- **Scope** JPMA has a membership of 69 companies (as of October 2009). The membership list can be found on page 26.
Please note that subject range of the performance data collected differs for each article, and a specific description for each article can be found on the corresponding page.
- **Period** Performance data were collected and collated for the entire FY 2008 (from April 2008 to March 2009). Information on each group's activities up to as late as November 2009 may also be included.

Date of Publication

December 2009 (Planned Publication of Next Issue: December 2010)

This report is also available at our website.

(JPMA Website; "About Activities of JPMA; JPMA Publication; free Publications)

<http://www.jpma.or.jp/about/issue/gratis/eco/eco2009.html> (Japanese version)

<http://www.jpma.or.jp/english/Library/Environmental/index.html> (English version)

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Organizational Structure

Japan Pharmaceutical Manufacturers Association

The Japan Pharmaceutical Manufacturers Association (JPMA) is a voluntary organization consisting of research-based pharmaceutical manufacturers which has 69 members (as of October 2009). Committed to a patient-oriented approach, JPMA members have been contributing to global healthcare through the development of new ethical drugs. Multiple activities are being carried out, including solutions to common issues in the

pharmaceutical industry, campaigning to gain a public understanding of pharmaceuticals, and international cooperation. The Association aimed to support the sound development of the industry by proactively establishing policies and recommendations, responding to globalization, and reinforcing public relations.

Environment & Safety Committee

The Environment & Safety Committee sets objectives for global environmental conservation and occupational safety and health, and supports member companies pursuing environmental, health and safety policies. Through publication of the Environmental Report and information exchange with external parties, the Committee is making efforts to improve our communication with society.

The Committee also hosts the technical training courses and seminars to facilitate the exchange of information between member companies, the examination of occupational safety and health-related policies, and the distribution of environmental technology-related information.

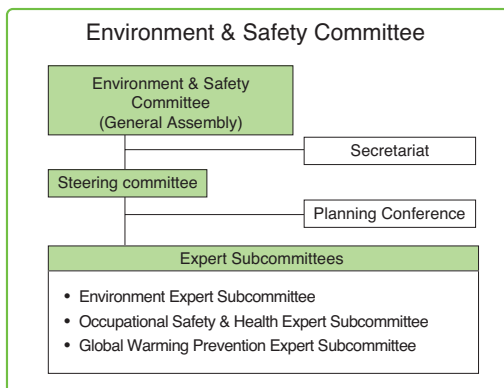
The Committee prepares an annual plan to clarify the targets, and the status of progress is monitored annually.

It is also recognized as an important role of the Committee to collaborate with various stakeholders in the effort to tackle the environment and occupational safety and health issues, which are common tasks for the pharmaceutical industry. Thus, the Committee endeavors to strengthen communication with outside parties.

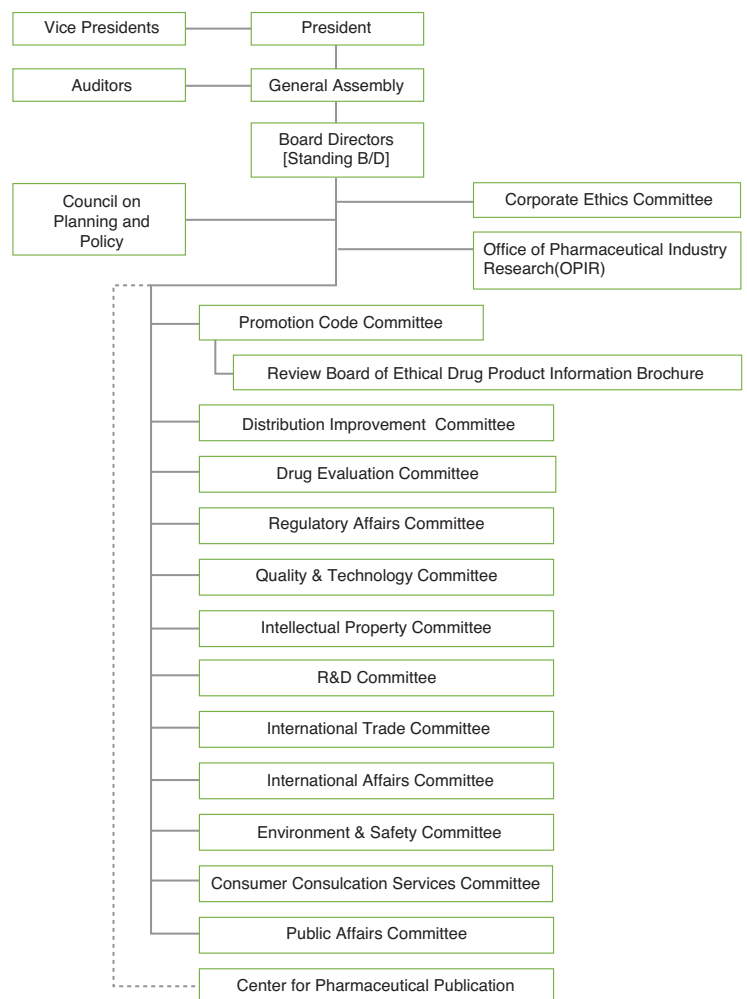
Organization

The Environment & Safety Committee consists of committee members and technical committee members who participate in the following: the "General Assembly", "Planning Conference", "Steering Committee" and "Expert Subcommittees". The General Assembly is held annually in April to govern basic policies, establishing the business plan for each fiscal year, and other businesses. The Planning Conference, consisting of a chairperson, deputy chairpersons, and a secretariat, assigns and coordinates Expert Subcommittee tasks, handles government administration-related matters, and reports to and communicates with the Board of Directors. The Steering Committee consists of a chairperson and vice chairperson of each Expert Subcommittee, Planning Conference members, and others, and is responsible for implementing the business/project plan and coordinating other matters of general business. Within each Expert Subcommittee, the technical committee members are assigned to working groups, each of which engages in a particular task described in the business/project plan, and these groups conduct investigations, plan training courses, prepare various reports, and/or other relevant tasks.

Expert Subcommittees consist of Environment Expert Subcommittee, Occupational Safety & Health Expert Subcommittee and Global Warming Prevention Expert Subcommittee. They are grappling with environment and occupational safety & health themes.



JPMA Organization



Planning/Progress

Environment Safety Action Planning

The Environment & Safety Committee General Assembly is held annually in April to discuss and decide the annual and midterm action plans, taking into account progress made in the previous fiscal year and current trends in society. In FY 2008, Expert Subcommittees were set to work in four project areas consisting of Global Warming Prevention, Resource Conservation & Waste Management, Chemical Substance Management, and Occupational Safety and Health. These subcommittees promoted each activity according to the plans. Some issues were difficult for a single company to resolve. To help those member companies facing the challenges, the Environment & Safety Committee gathered pertinent information from external parties and experts, so that the necessary tasks could be clarified and solutions found. The Environment & Safety Committee also periodically publishes information bulletins, investigational reports, technical information

dossier, etc., to make findings accessible and to assist our member companies' actions on the environment, occupational safety and health.

Followings are numerical targets set by the Environment & Safety Committee for each respective area.

Our actions towards occupational safety and health mainly involve investigation of the member companies' efforts in introducing and establishing an occupational safety and health management system, the state of work-related accidents and incidents, the management of employees' health, mental health management, measures to prevent business vehicle accidents, etc. Findings are then disclosed to the member companies.

Global Warming Prevention

To control total CO₂ emissions from pharmaceutical manufacturers in FY 2010 (mean level of the first 5-year period pledged under the Kyoto Protocol) to below that of the baseline level in FY 1990.

* Since FY 1997, we have continued our efforts in this area, encouraging the main organization and companies under the umbrella to take part in the Follow-up to the Keidanren Voluntary Action Plan on the Environment. In accordance with the provision made under the Kyoto Protocol in which the stipulated target was reduced emissions, our target has been set to reduce CO₂ emissions output to below the FY 1990 emissions benchmark.

Resource Conservation & Waste Management

- A 20% reduction of final disposal amount to the landfill by FY 2010 (against the FY 1990 benchmark)
- Final Disposal Rate of 5% or less by FY 2010
- A 10% reduction of waste generation by FY 2010 against the FY 1990 benchmark

* Since FY 1998, as part of our waste reduction efforts, we have set numerical targets for the final output of waste and quantity to be recycled into resources. The action plan has progressed smoothly, and we have now introduced a system in which, once an existing target is attained, a new numerical target is set.

Chemical Substance Management

We have endeavored to reduce atmospheric emissions of harmful atmospheric pollutants such as dichloromethane, 1,2-dichloroethane, and chloroform since FY1997. As in our efforts for Resources Conservation and Waste Management, we employ a method in which the target figures are reviewed when the existing targets have been attained; as well as extending the range. FY2007 was the final year of the Third Term Action Plan and, as the result of analyses of the data for the year, it was deemed that these actions achieved the primary objective, therefore, no new numerical targets shall be set but existing efforts shall be continued.

State of Progress of Action Plans

The Environment and Safety Committee implements its activities following action plans developed annually and for the medium-term by each Expert Subcommittee in their respective areas such as measures to prevent global warming, measures to reduce waste, measures to reduce atmospheric emissions of harmful atmospheric pollutants, and promoting occupational safety and health activities. Meanwhile, for the matters related to reinforcing partnerships with superior industrial bodies, the national government and the society, the Planning Conference liaises with relevant expert subcommittee to facilitate information sharing and exchanges of opinions.

The following explains the state of progress of the Environment and Safety Committee activities in FY2008.

Global Warming Prevention

The state of progress in this area was still at 7.0% above the target figure. However, this is a marked reduction to 83.6% in comparison to the performance in the previous year (a reduction of 347,000 tons). This is a positive result demonstrating the proactive efforts made by our member companies shown in concrete figures. We will continue our efforts towards attaining the numerical targets.

Resource Conservation and Waste Management

In terms of the volume of waste for final disposal, the final disposal rate or the waste generation output, the target has been attained, and our action plan for the period ending FY2010 has already been deemed complete. The proactive actions by our member companies toward attaining the numerical targets are also visible in this area. We will continue our efforts in waste reduction, as well as working toward the development of a new action plan for the period ending in FY2015.

Chemical Substance Management

With regard to the third term action plan aiming to reduce atmospheric emissions of dichloromethane, 1,2-dichloroethane, and chloroform, the numerical targets were already attained in FY2007. Based on these achievements, JPMA deemed that our primary objective was sufficiently achieved for our voluntary control plan of harmful atmospheric pollutants. We will continue to promote among our member companies further voluntary action for reductions, as well as to prepare for new action.

While JPMA action plans for resource conservation and waste management and chemical substance management have progressed smoothly, the outcomes fell well short of the numerical target in the area of global warming prevention due to production increases, etc. However, for FY2008, the first year of the first pledged period under the Kyoto Protocol, the level of CO₂ emissions was markedly reduced in comparison to the previous year. JPMA

will continue to collaborate with the Federation of Pharmaceutical Manufacturers' Associations of Japan (FPMAJ) in our efforts to attain the numerical targets as much as possible by requesting each member company to take more proactive action and actively assist in their efforts through facilitating the sharing of information related to energy saving technologies and hosting technical training courses.

FY 2008 Business Plan: State of Progress and Attainment Summary

Topics	FY 2008 Business Plan	Activities and Achievement in FY 2008
Environment & Safety Management	<ul style="list-style-type: none"> ● Disclose information related to environmental management ● Gather information related to the environment and occupational safety & health ● Collaborate and communicate with parties within and outside of the industry ● Support member companies' actions 	<ul style="list-style-type: none"> ● Published Environmental Report 2008 ● Hosted technical training courses ● Information sharing and collaboration with FPMAJ and other committees ● Hosted seminars about measures to prevent global warming and biological diversity.
Global Warming Prevention	<p>Numerical targets</p> <ul style="list-style-type: none"> ● Control total CO₂ emissions from pharmaceutical manufacturers in FY 2010 (mean level of the first 5-year period pledged under the Kyoto Protocol) to below that of the baseline level in FY 1990. <p>Action plan</p> <ul style="list-style-type: none"> ● Follow-up to the Keidanren Voluntary Action Plan on the Environment ● Host energy saving technical training course ● Investigate and review information about measures to prevent global warming 	<p>Numerical targets</p> <ul style="list-style-type: none"> ● Exceeded the target by 7.0% (115,000 tons) <p>Action plan</p> <ul style="list-style-type: none"> ● Conducted a follow-up survey in collaboration with FPMAJ ● Hosted the 13th technical training course with about 120 attendees ● Published technical case study dossier and distributed to the member companies ● Facilitated information sharing, information gathering, and site visit events
Resource Conservation & Waste Management	<p>Numerical targets</p> <ul style="list-style-type: none"> ● Up to a 20% reduction in final disposal amount of waste to the landfill by FY 2010 (against the FY 1990 benchmark) ● Achieve 5% or less in final disposal rate by FY 2010 ● A 10% reduction in waste generation quantity by FY 2010 against FY 1990 benchmark <p>Action plan</p> <ul style="list-style-type: none"> ● Follow-up to the Keidanren Voluntary Action Plan on the Environment ● Review information about measures to reduce waste and about recycling ● Review information about general medical care waste 	<p>Numerical targets</p> <ul style="list-style-type: none"> ● Final output of waste: up to 6.6% of FY 1990 benchmark ● Final Disposal Rate: 1.9% ● Waste generation quantity: 13.8% reduction against FY 1990 benchmark <p>Action plan</p> <ul style="list-style-type: none"> ● Conducted a follow-up survey in collaboration with FPMAJ ● Collection of technical information and facilitation of site visits ● Conducted an investigation on MDI in collaboration with FPMAJ and reviewed future actions
Chemical Substance Management	<p>Action plan</p> <ul style="list-style-type: none"> ● Harmful Air Pollutants Voluntary Management Plan follow-up actions, PRTR, and VOC surveys ● Study on safety of chemical processes, investigation and review of the information 	<p>Action plan</p> <ul style="list-style-type: none"> ● Conducted the follow-up, PRTR and VOC investigations ● Conducted study about risk assessment of reaction processes and hosted lecture and site visit
Occupational Safety & Health	<p>Action plan</p> <ul style="list-style-type: none"> ● Investigate status of introduced occupational safety and health management system and state of occupational accidents and incidents ● Review of measures for health management of employees ● Investigate the state of MR's business vehicle accidents and countermeasures ● Host technical training course ● Review of technical information and regulations under occupational safety and health legislation 	<p>Action plan</p> <ul style="list-style-type: none"> ● Investigated the status of introduced occupational safety and health management system, and state of occupational accidents and incidents ● Investigated actions taken to manage employee's health, such as periodical health screening and mental health measures ● Conducted survey on accidents involving business vehicles and countermeasures against them. ● Hosted lecture about occupational safety and health

Global Warming Prevention

In the second year of the first pledged period under Kyoto Protocol, concrete action for global warming prevention is required.

JPMA recognizes global warming prevention as the most important mission in its efforts to protect the global environment. In 1999, we developed and announced a reduction in total CO₂ emissions as a target in the JPMA voluntary environmental action plan. JPMA is continuing its

efforts in the reduction of CO₂ emissions, working towards the common target.

Incidentally the new government has launched a new global warming prevention policy including a considerably larger reduction target. It is time for JPMA to also review the direction of our future actions to control global warming.

JPMA's Actions

- 1 JPMA takes part in the Follow-Up Action for the Japan Business Federation's (Nippon Keidanren) Voluntary Action Plan on the Environment. Through collaboration with the Federation of Pharmaceutical Manufacturers' Associations of Japan (FPMAJ) JPMA monitors, reports and publishes the levels of CO₂ emissions and efforts by the members in the prevention of global warming.
- 2 JPMA hosts an annual Energy Saving, Global Warming Prevention Technical Training Course to facilitate information sharing and opinion exchanges between JPMA member companies and energy saving technology related businesses, academic experts and government administration personnel. The course for FY2009, on the theme, "Expansion of Comprehensive Policies for the Attainment of the JPMA Voluntary Action Plan for Environmental Targets" was held in October.
- 3 We conduct multi-perspective studies in the form of study groups on comprehensive action for the Kyoto Protocol.

Target

To control the total CO₂ emissions output from pharmaceutical manufacturers in FY2010 (mean level of the first 5-year pledged period under the Kyoto Protocol) to below that of the baseline level of FY1990

1. Keidanren Voluntary Action Plan on the Environment (Global Warming Prevention Edition); Status of FY2009 Follow-Up Action

JPMA carries out Follow-Up Action according to the Nippon Keidanren (Japan Business Federation) Voluntary Action Plan for the Environment every year in partnership with FPMAJ. In FY2009, as an effort to expand voluntary action plan participation, we requested the Japan Generic Pharmaceuticals Manufacturers Association (JGPMA) and Japan

Self-Medication Industry (JSMI) to ask their members to take part in a survey on the Follow-Up Action.

The 2009 Follow-Up Action Survey Report was submitted to Nippon Keidanren (Japan Business Federation) on September 18, 2009.

1 67 Companies were the Subject of FY2009 Follow-Up Action Study

Responses from a total of 101 companies including 65 JPMA members and 36 JGA or JSMI members were received. The validity of the data submitted from these companies was assessed and 67 companies were deemed fit to be compiled in the Follow-Up Action Survey. About a third of

the companies (34 companies) who responded were deemed unfit to be part of the survey since they did not have energy profile data for the baseline year, FY1990.

2 Methodology

A questionnaire survey was conducted and the data returned by each company was then compiled for each fiscal year. The calculation of the quantity of energy used and the CO₂ emissions level was conducted using the formula provided in the Keidanren Voluntary Action Plan for the

Environment Follow-Up Action survey form. The CO₂ emissions level from electricity use in FY2008 was calculated using an adjusted electricity carbon emissions coefficient.

3 Subjects of the calculation

Energy use and CO₂ emissions levels at factories and laboratories were the subjects of the calculation.

4 Coverage rate

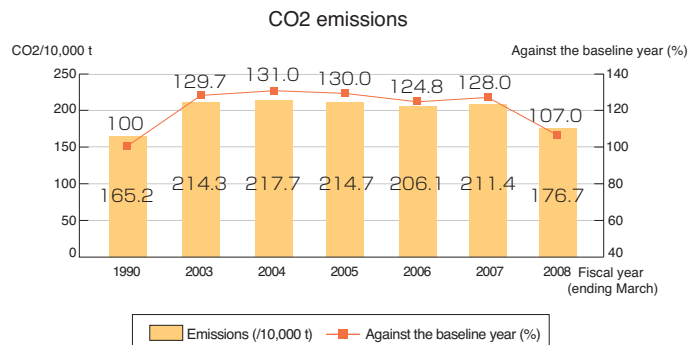
The 67 companies that were subject to the Follow-Up Action Survey Analysis account for 18.4% of the 364 pharmaceutical manufacturers in Japan. Incidentally the FY2008 Study had the number of Japanese pharmaceutical manufacturers as 1,231. The change is due to changes in

the study subjects in the "Study of the Current State of the Pharmaceutical Industry" by the MHLW, which we use as the base data source. The sales performance of the 67 companies covers 83.6% of the market.

2. Voluntary Action Plan on the Environment: State of Progress

1 CO₂ emissions

The quantity of CO₂ emissions that was discharged in FY2008 was 1,767,000 tons, which equates to 107.0% of (115,000 tons over) the FY1990 benchmark. The causes for any increase or reduction in emissions levels were analyzed as: 884,000 tons of the increase is due to production growth; 665,000 tons of the reduction is due to energy saving measures and a further 104,000 tons of the reduction is due to a change in the emissions coefficient affecting the calculation. Altogether, the current year saw a considerable reduction of 347,000 tons compared to the previous fiscal year. 17 companies identified increased production as the main cause for the increase in emissions; while 29 companies answered that improved energy efficiency and 15 companies answered energy source conversion as the principle factors that lead to a reduction. We believe the result indicates that the energy savings and global warming prevention measures promoted by JPMA have started to take effect.



2 Efforts for Global Warming Prevention

The pharmaceutical industry needs to meet strict international control standards in research and development, manufacturing and distribution, (as stipulated by the "Ministerial Ordinance on Standards for Manufacturing Control and Quality Control for Drugs and Quasi-drugs" and other regulations). Consequently there are ever increasing energy expenditures for air conditioning facilities, etc. We take efforts to reduce energy for measures to convert fuel and introduce highly efficient appliances. Measures implemented in FY2008 for energy savings and global warming prevention cost a total of ¥6,770,000,000 in capital and expenditures. The principle measures that were implemented and their CO₂ emissions reduction effects are summarized in the table on the right.

The largest reduction came from the "Energy source switch": 12 cases of energy source switch in FY2006 resulted in a CO₂ reduction of 8,092 tons; 22 cases in FY2007 with a CO₂ reduction of 56,960 tons and 18 cases in FY2008 with 66,105 tons of reduction. The marked reduction since FY2007 should be noted. We recognize energy source switching as a major contributor to CO₂ emissions reductions. Therefore the JPMA Environment and Safety Committee will offer information to our member companies and recommend energy source switching.

Cases of Measures Implemented in FY2008 and their effects on CO₂ emissions reductions

Measures implemented in FY2008	Cases	Reduction (t-CO ₂)
Energy source switching (from diesel, kerosene to city gas supply, propane, electricity, or similar)	18	66,105
Review of facility or machinery operational procedures and control methods (start up, stopping, schedule, intermittent, number of machines in operation, and so forth)	33	8,148
Selection of highly efficient machines, etc.	33	6,549
Alteration of standards or default settings (temperature, ventilation frequency, cleanliness, level of lighting, operating hours, etc.)	8	1,793
Installation of inverter (VVVF) based devices (such as ventilator fans, pumps, agitators, lighting, or other devices)	27	1,282
Improved manufacturing efficiency	5	676
Implementation of measures to prevent leakage (plumbing repairs, switching to mechanical seals)	9	608
Reduction in losses from no loading of transformer	6	539
Reduction in heat losses by thermal insulation around machinery and piping	5	535

Note) Figures are the total number of reported cases of measures and their CO₂ reduction effects submitted by the respective companies

3 Future action

JPMA intends to work in partnership with FPMAJ in its efforts to attain the target in our Voluntary Action Plan on the Environment. Our action will include the following:

- ① To increase the number of object companies in the survey
- ② All member companies to develop a reduction plan for the first pledged period under the Kyoto Protocol
- ③ Further promotion of energy source conversion
- ④ To advance comprehensive actions including utilizing new energy sources and emissions trading credits
- ⑤ Not only the factory and laboratory, but also measures in the offices and the employee's homes-are promoted

TOPICS

On the Japan Pharmaceutical Manufacturers Association's Efforts for the Environment: Feedback from a Training Course Attendant



Mr. Tsutomu Sasaki
The Japan
Research Institute, Ltd.

I had the honor of being part of the 13th Energy Saving and Global Warming Prevention Technical Training Course run by the JPMA over two days on 15 and 16 October 2009. About 260 participants actively took part in the course over the two days, remaining at the venue to continue their discussions well after the end of the day's session. It was a very content rich and significant course. I was interested in the presentations about global warming prevention case studies.

Since President Obama's "Green New Deal" statement, the trend of the world seems to be towards taking advantage of the business opportunities of current global warming prevention initiatives as a force to drive the economy. The same trend is also visible in Japan. Here industries such as the auto industry are excited by the opportunities of hybrid and electric vehicles; electrical appliances and IT hardware industry with the potential for renewable energy technologies such as energy saving products and solar power utilization; and businesses that supply the materials to these industries are creating business opportunities out of the global warming issue, with the help of the government. The distributors are also showing moves to use global warming prevention in their business using techniques to offset the carbon deficit.

On the other hand, the pharmaceutical industry seems to be standing a little away from such "awakenings" that are affecting the world. Implementing advanced anti-global warming technologies with a large investment in the environment, it would not "directly" lead to the expansion of market share in this industry. It is also difficult to use global warming prevention in marketing due to various restrictions.

In other words, global warming prevention means to the pharmaceutical industry making efforts without "real benefits", apart from its energy saving effects; and has a low operational priority. Despite this situation, the JPMA has set an ambitious reduction target, "To control total CO₂ emissions in FY2010 to below that of the baseline level in FY1990", and has now actually attained the target within the visual range. Being a part of the course and seeing how attentive the participants listened to the talks and how actively questions were posed and discussions carried out, made me appreciate the efforts by JPMA members in implementing energy saving and global warming prevention measures "stubbornly" (in a good sense). Considering the attributes of the industry as previously mentioned, these efforts of yours so far have truly impressed me.

At the course, I was honored to give a presentation on the topic, "Trends surrounding emissions trading". My talk consisted of commentaries on the international framework and the impact of political trends in Europe, the US and Japan on the future of "Emissions rights and emissions trading". Where the Post-Kyoto discussions will end up is still anyone's guess and, there is no certainty about a federal level emissions trading scheme currently being discussed in the US. On the other hand Europe has already decided to continue to develop an emissions trading scheme beyond 2013. Greenhouse gas emissions regulations are already part of international shipping and aviation, eye-witnessing the birth of "major consumers of emissions right" It is not only the US but also Japan that is now considering the introduction of emissions trading. In conclusion, despite the discussion about the pros and cons of emissions trading, I believe a realistic vision would be that "Emissions trading will, with ongoing improvements, continue to exist as an option for future global warming prevention"

Trading of emissions rights and credits is no longer a difficult task with the improved infrastructure such as the administrative procedural aspects. The object of trading is not a special product handled only by major consumers, but anyone can be a part of the trade. The current task in emission rights/credits trading can be said to be making a decision about the "effective use of emissions rights/credits trading". Unless an internal consensus in a company is reached as to "how much this company can reduce", "up to how much will the cost be acceptable" and "what is the extent of the commitment to implementing the measures for reduction", no decision can be made on matters regarding emissions rights/credits trading. At the end of the day, any company has to tackle its own reduction measures very seriously.

Regulations concerning reductions in greenhouse gas emissions will become more stringent. It would be no surprise if the world came to demand that business should achieve a 25% reduction or even 50% reduction target. Such a high reduction target would be very difficult to achieve with "ordinary countermeasures" alone and could jeopardize the corporate operation itself. The countermeasures in such a context would need to be comprehensive and integrated. For example existing energy saving investment policies (investment criteria) would need to be altered and evolve a step further to become a countermeasure; and emissions rights/credit trading would need to be used effectively.

Though we are in such turbulent times, I am sure the member companies of the Japan Pharmaceutical Manufacturers Association, with its history of tackling energy saving and the global warming issues head-on, will take active initiatives for global warming prevention and make positive contributions.

Study Group
Activities

Kyoto Protocol Comprehensive Action Study Group

Prime Minister Hatoyama delivered his speech at the United Nations General Assembly declaring an "International Pledge" on 23 September 2009: "For its medium-term goal, Japan will aim to reduce its emissions by 25% by 2020, compared to the 1990 level". He also presented a framework to support developing countries efforts for greenhouse gas reductions. This "Hatoyama Initiatives" appealed to the leadership role Japan plays in this field. We believe, from now on, there will be more and more activities related to countermeasures and actions aimed at the Post-Kyoto Protocol era.

Activities of the JPMA Kyoto Protocol Comprehensive Action Study Group so far have included studies concerning measures and policies to control global warming, responses to regulatory legislation, providing information, etc. Our activities in the current fiscal year included: "Visit to TEPCO (Tokyo Electric Power Company) Factory for observation and experience"; "Excursion to observe the actual implementation of CO₂ emissions reduction measures (solar photovoltaic power generation)"; "Validation of Japan's post-Kyoto Protocol reduction target" and "Case studies on energy saving".

We are well into the second year of the first pledged period under the Kyoto Protocol. With the Amendment to the Act on the Rational Use of Energy already in force, we cannot avoid facing the demand for more advanced action towards attaining the first pledged period target.

We will continue our investigations and studies concerning action and measures to prevent global warming, and provide useful information to the JPMA member companies.



Visit to TEPCO (Tokyo Electric Power Company) Factory for observation and experience

Resource Conservation & Waste Management

The current situation with regard to waste treatment poses serious problems such as shortage of final disposal capacity (landfills) and illegal dumping.

Also, the recent rapid economic growth seen in Asian countries has caused an enormous demand on resources and energy, and the

importance of saving energy and natural resources is much more important than ever, especially in Japan where natural resources are not rich.

In terms of Japanese resource management policies, it is now essential to advance efforts in becoming "Sound Material Cycle Society"

JPMA's Actions

JPMA has developed voluntary targets to save resources and reduce waste, and has been implementing various 3R activities to achieve them.

Target

- 1 Up to a 20% reduction of final disposal amount of wastes by FY 2010 (compared to the FY 1990 performance)
- 2 Final Disposal Rate: to be 5% or less by FY 2010
- 3 Waste Generation: 10% reduction in FY 2010 compared to the FY 1990 performance

1 Final Disposal Amount of Wastes (Figure 1)

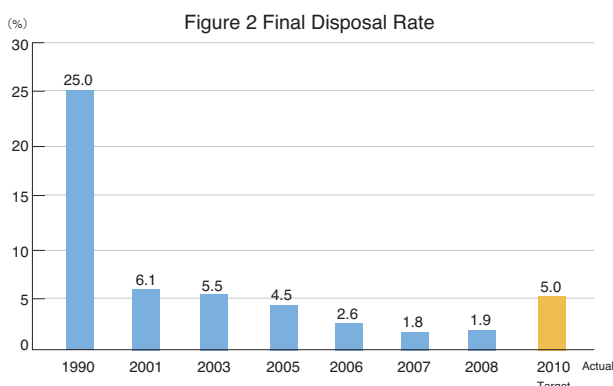
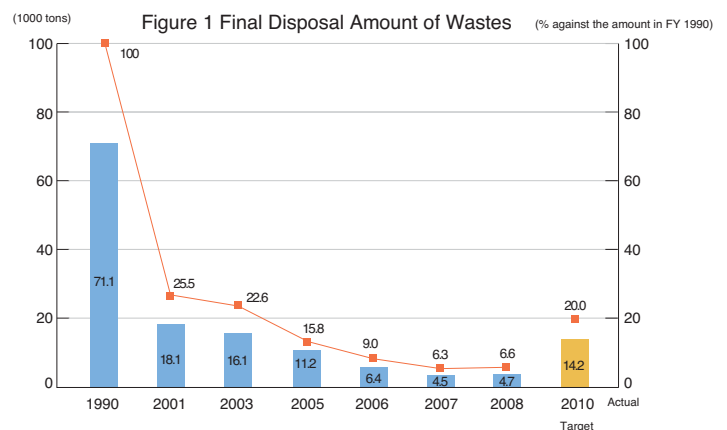
Due to our member companies' efforts in recycling wastes and reducing their generation, the final disposal amount of wastes has been steadily reduced. The final disposal amount of wastes in FY 2008 was as low as 4,700 tons (6.6% against the amount in FY 1990), having already attained the target in FY 2005.

2 Final Disposal Rate (Figure 2)

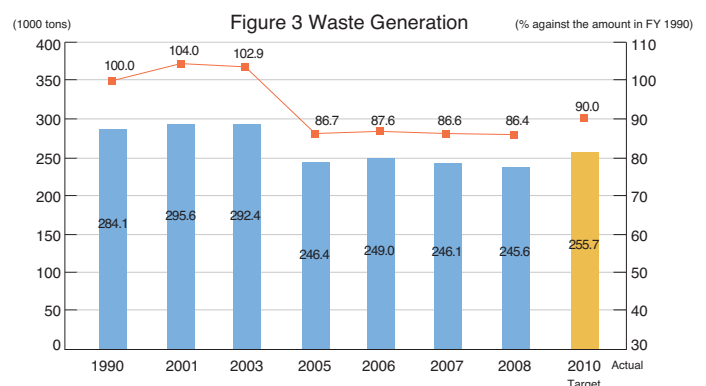
The final disposal rate of wastes in FY 2008 was 1.9%. As was the case with the final disposal amount, this indicator has already reached the target in FY 2005.

3 Wastes Generation (Figure 3)

Our member companies have also been striving to reduce waste generation. In spite of increasing sales of pharmaceuticals due to the rapidly aging society in Japan, waste generation has gradually decreased in recent years. The waste generation in FY 2008 was 245,600 tons (14% reduction against the FY 1990 generation). The target has been achieved. We will continue to work on reducing waste generation.



Note: Final Disposal Rate = (Quantity of final disposal amount of wastes) / (quantity of waste generation) x 100



* A questionnaire was sent to each of 69 JPMA member companies (at the time of survey). The responses received from 65 companies were collated, and the data were normalized with the survey cover rate based on the pharmaceutical sales. The survey rate in FY 2008 was 99.8%

TOPICS

"2009 Minister of the Environment Award for Contribution to Promoting the Sound Material Cycle Society" ~ Effort on Environmental Protection by the Tokushima Wajiki Factory, Otsuka Pharmaceutical Co., Ltd.~

Tokushima Wajiki Factory, Otsuka Pharmaceutical Co.,Ltd. Masanobu Kano

Tokushima Wajiki Factory is located in undulating green hills along the Naka-gawa River in Southern Tokushima. It was built with the concept of becoming a factory park that is opened to the community.

1. Factory overview

The factory started operations in 1989. It currently produces pharmaceutical products and dietary supplement products (Calorie-Mate blocks). We obtained ISO14001 certification in March 2001 and were certified as a 3R Model factory by Tokushima Prefecture in 2006. We have 130 employees in the factory and 383 tons of wastes was generated in 2008 (approx. 90% of which was food factory waste).

2. Our Efforts

(1) Achieving zero emissions

We have achieved "zero emissions" for waste since FY2007. The main wastes at the pharmaceutical factory are glass waste (ampoules and vials), which are recycled as raw materials in cement mix or base filler for road construction. A large amount of food waste generated at the food factory is utilized as pig feed or is composted. Other wastes include plastic wastes, which are used as a heat source for large scale tomato cultivation or as a solid fuel; and food wastes from the staff dining hall, which are composted with a mechanical composter and used in tending the plants in the factory.

* Zero emissions at the factory: 99% or more of the total quantity of waste (including valuable materials) is being recycled



Award presentation by Nobumori Otani, the Parliamentary Secretary for the Environment
Mr. Takashi Yamaguchi, Manager, Tokushima Wajiki Factory, accepts the award

(2) Reduction in wastes and chemical substances

The sludge generated at the waste water treatment plant is returned to the aeration tank, etc., for aeration and microbiological decomposition. The sludge generation in FY2008 was reduced to one seventh of that in FY2000. As a result, the consumption of precipitant aggregation agents and neutralizers was also reduced (FY2008: FY2000 = 1:4)

(3) Promotion of social contribution through environmental activities

1 River Adopt Action

We started a "River Adopt Action" in FY2003, which involves cleanup of the bed and terraces of the local Nakagawa River, in partnership with three other local organizations. We pick up, sort and recycle the wastes collected in the riverside (the FY2008 action saw 245 participants collecting 228 kg of waste).

* River Adopt Action: each participating organization adopt a section of the river to clean and beautify

2 Donguri (Acorn) Project

Since FY2006, we have been a part of the Tokushima "Donguri Project", an initiative to plant the acorns of trees that carry genes unique to southern Tokushima and nurture them to grow into a forest.

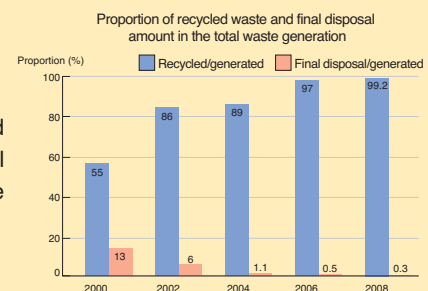
3 Participation in Community Organizations

We participate in "Minami kara todokeru Wa-zukuri Kaigi", a community organization with people from industry, officials, academia and the public in southern Tokushima district, to think about and act on environmental protection. We conducted a comprehensive survey on river water quality in FY2008.

4 Host a concert in cooperation with the community

We have hosted an outdoor rock concert every August in cooperation with the people of the Naka-cho community. Waste generated there is sorted and recycled.

In accepting this award, we would like to express our sincere gratitude to the people and local government of the community for their cooperation. Winning the award will add to our passion for our future activities in protecting the environment, the prevention of global warming and our contribution to the community.



Chemical Substance Management

Various kinds of chemical substances are used in the Pharmaceutical industry for the research, development, and manufacturing of pharmaceuticals contributing to people's health. Some of those chemicals may have a harmful impact on human health and/or the ecosystem if discharged into the environment. Consequently, we recognize that reducing the quantity of such harmful chemical substances discharged into the environment is one of major issues in the pharmaceutical industry, and voluntary programs on chemical substance management have been implemented.

We promote the research activities on process safety in order to prevent environmental pollution and fire caused by chemical substances used for manufacturing pharmaceuticals.

There have been recent reports on which traces of pharmaceutical ingredients were detected in rivers and sewer discharge. Though their concentrations were very low, nonetheless there is an increasing necessity for Japan to investigate the environmental impact of the pharmaceuticals on the environment, as done in Europe and America. Currently, a study of the environment impact assessment system of the pharmaceuticals has been promoted by the Ministry of Health, Labour and Welfare, in which JPMA is taking an active part. (See the article on page 21)

JPMA's Actions

JPMA began a voluntary PRTR survey actions in FY 1997 to monitor the quantity of emissions to the environment and transfers of the designated chemical substances handled in the pharmaceutical industry, and the survey results have been disclosed. Since FY 2007 we have also investigated the use of volatile organic compounds (VOCs, Note 3). The Voluntary Action Plans on Harmful Atmospheric Pollutants were successfully completed in FY 2008, for the quantity of air emissions of dichloromethane, 1,2-dichloroethane and chloroform were reduced by 80% or more during the entire action period from the First to Third Term. (Please refer ENVIRONMENTAL REPORT 2008)

PRTR Survey

Sixty nine JPMA member companies handled 14,734 tons (a 18% reduction compared to the amount in FY 2007) of 354 class I substances, of which 696 tons (1% reduction) were released into the atmosphere, 18 tons (12% reduction) into public water, and nil into the soil.

In terms of the annual usages, toluene (4,420 tons), dichloromethane (3,356 tons), and N.N-dimethylformamide (1,465 tons) were the three biggest substances in this order. In terms of the air emissions, the two biggest substances were dichloromethane and toluene, both exceeding 100 tons. These were followed by 1,1-dichloro-1-fluoroethane, chloromethane and chloroform in this order (see figure 1). Total of the air emissions of these five substances comprised 89% of the total air emissions.

JPMA member companies have continuously reduced the emissions of PRTR substances to the environment. They have been steadily reduced since FY 2002. We succeeded in a 59% reduction of emissions by FY 2008 against the level in FY 2002, (see figure 2).

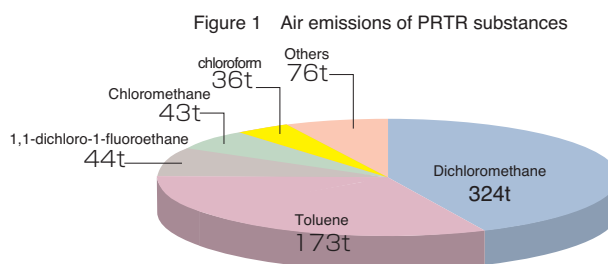
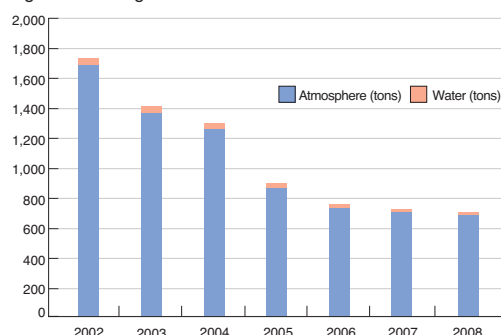


Figure 2 Changes in environmental emission of PRTR substances



Note 1) Survey covered a total of 239 business establishments belonging to JPMA member companies, their affiliated or related companies

Note 2) Chemical substances stipulated in the "Act on the Confirmation, etc. of the Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof" (PRTR Act)

Note 3) Volatile organic compounds (VOC) are one of the causes of Suspended Particulate Matters and Photochemical Oxidants

Chemical Substance Management

VOC Survey

The amendment of the Air Pollution Control Act brought in a provision to control the atmospheric releases of volatile organic compounds (VOC), coming into force in 2006 with the target which is intended to reduce the air emissions in FY 2010 by about 30% compared to the emissions in FY 2000. Although the member companies hardly have facilities applied by this regulation, JPMA conducted a survey on the annual usage of VOCs among the member companies. The VOCs in the survey included the 100 main VOCs stipulated by the Ministry of Environment, plus n-propyl alcohol, which is widely used in the pharmaceutical industry. In FY 2008, the air emissions of VOCs were also investigated.

In FY 2008, 41 substances were handled in quantities of one ton or more annually, and in total 51,807 tons were handled. The four biggest substances were methanol, ethanol, acetone, and ethyl acetate, listed in decreasing order (See figure 3). The total air emissions of VOCs were 3,177 tons. The biggest four substances were ethanol, methanol, dichloromethane, isopropyl alcohol in decreasing order (See figure 4). These four substances comprised 74% of the total emissions of VOCs.

Figure 3 Annual usage of volatile organic compounds (VOC) in FY 2008

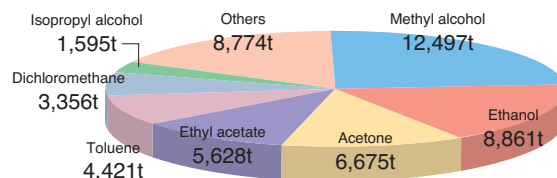
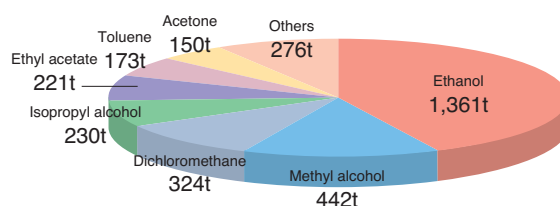


Figure 4 Air emission of VOCs in FY 2008



(Note 1: The survey covered 226 facilities belonging to the JPMA member companies, their affiliated or related companies)

Study Group Activities

Process Safety Study Group



The Process Safety Study Group started its activities in April 2007. We are now in our third year and have 20 members from 13 companies. The contents of our activities are acquiring knowledge about and up-skilling in the area of safety evaluation in the development, scale-up and industrial applications for manufacturing of active pharmaceutical ingredients (API), as well as information sharing and the promotion of accident prevention and safety measures.

This year we have invited risk assessment test services and knowledgeable experts to give us presentations and instruction on thermal and impact risks in chemical substances and the assessment of explosive reaction risks, basics for static electricity prevention, accident case studies, safety assessment case studies, etc. We also visited the risk assessment testing laboratory in Japan Carlit Co., Ltd. in July 2009. Our tour included information

about various testing methods as well as actual chances to see various tests involving explosions, which we normally do not have a chance to experience.

In addition to the above activities, the study group members exchanged information about the status of the development of chemical process safety assessment systems in their respective companies, actual cases of the expansion of process capacity and countermeasures to address issues. We also conducted a survey on the status of actions by the study group members' respective companies about the "Choice of solvents in manufacturing active pharmaceutical ingredients (API)" and "Adequate disposal of gasses generated during the manufacturing process". We are currently considering how best to compile the results and provide the information gained to JPMA member companies. We will advance in the direction of gaining practical knowledge and providing the information to our members.

Summary of the Process Safety Study Group Sessions from November in 2008 to October in 2009

	Topic	Speaker / firm
9th	Method of safety assessment and measures in the scaling up of explosive reaction processes	Director of the Enterprise Group Explosives Division, Asahi Kasei Chemicals Corporation  Mr. Hiromu Kawakubo
	Case study presentation by a Study Group member company	
10th	Chemical risk assessment in batch processes part 2	Chief Executive PHA Consulting Co., Ltd. (Formerly Director of Mitsubishi Chemicals MCRC Environment & Safety Engineering Laboratory)  Mr. Yoshiaki Iizuka
	Seminar: "Static electricity explained part 1"	Advisor for Bekinit K.K. (Contract Researcher for the National Institute of Occupational Safety and Health, Japan) Mr. Kunio Matsukura
	Presentation of case studies by two Study Group member companies	

	Topic	Speaker / firm
11th	Visit to Japan Carlit Co., Ltd. (facility observation, presentation and measurement demonstrations)	
	Presentation "On safety assessment tests"	Acting Director Risk Assessment Laboratory, Japan Carlit Co., Ltd. Mr. Yasuhiro Suzuki
	Case study presentation by a Study Group member company	
12th	Seminar "Dust explosions of pharmaceuticals: their cause and countermeasures"	Chief of Section Environmental Technology Co., Ltd. Mr. Hidetoshi Fukada
	Case study presentation by a Study Group member company	

TOPICS

Chemical substance management at Astellas Pharma



Mr. Yusuke Yamamoto
General Affairs & CSR,
Astellas Pharma Inc.

While our society receives the benefits created by chemical substances, they can also be harmful. We need to manage chemical substances to minimize their negative impact on people and the environment.

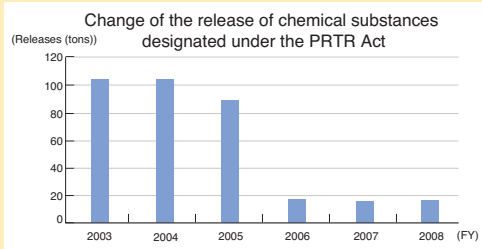
Astellas had introduced, as a means to prevent the chemical substances polluting the environment causing occupational incidents and health injuries, an “Environment and Safety Assessment System” to check the manufacturing methods from an early stage of R & D. This ensures a third party reviews whether there is room for further improvement in reducing the environmental burden and safety risks, before the optimal manufacturing process is finally confirmed. Such efforts have helped to facilitate the “Green Chemistry” philosophy, which has become one of our principles for manufacturing process design with consideration for the environment, safety and health.

Astellas Environmental Action Plan

- Reduce atmospheric emissions of formaldehyde by 95% or more from FY1999 level by FY2010
- Reduce atmospheric emissions of chloroform by 70% or more from FY2003 level by FY2009
- Reduce VOC emissions by 25% or more from FY2006 level by the end of FY2015

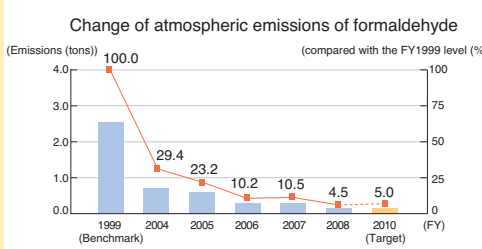
PRTR Survey

The PRTR Law currently designates 354 chemical substances as widely present in the environment and harmful to humans. Astellas assesses the levels of the release of such substances in order to select high-priority chemical substances and help our efforts in the evaluation and improvement of our voluntary chemical substance management actions. We are tackling reductions in the level of our releases of the specified chemical substances.

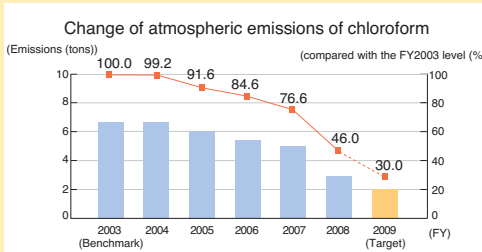


Measures to reduced atmospheric emissions of harmful atmospheric pollutants

Due to legislative restraint over the change of chemical substances used in manufacturing processes for pharmaceuticals, Astellas is voluntarily proceeding with initiative to reduce atmospheric emissions of harmful atmospheric pollutants introducing the trapping units and a review of operational procedures.



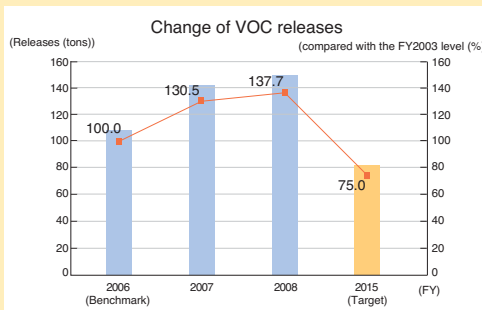
We controlled the level of atmospheric emissions of formaldehyde by switching the method of sterilization in the formulation process for injection products from formaldehyde fumigation to cleansing with Acetyl Hydroperoxide or reviewing the frequency of fumigation with formaldehyde; and finally attained the numerical target.



Another subject substance used in our laboratories, chloroform, is currently being controlled under an emissions reduction plan. Construction of a new research building and the subsequent introduction of a trapping unit should help attain the target by FY2009.

Measures to reduced atmospheric emissions of Volatile Organic Compounds (VOCs)

Our future issue in chemical substances management is the reduction of atmospheric emissions of Volatile Organic Compounds (VOCs). Though Astellas does not operate any unit that requires notification regarding VOCs, we have made voluntary efforts to reduce VOC's atmospheric emissions by, for example, reducing volume of VOCs used and introducing trapping units. Our VOC atmospheric emissions have increased since FY2006 due mainly to the expansion of the scale of our business and the increased use of methanol and ethanol. We will implement concrete actions toward the attainment of our reduction plan through, for example, the introduction of a release control unit in specific processes that use VOCs.



Occupational Safety and Health Management

For a business to carry out its operations smoothly, it must create and maintain a workplace environment that is safe, healthy and comfortable for its workers. In addition, as a part of risk management, it is now

required of a business to take proactive action so that potential risks to occupational safety and health are recognized and addressed before an incident occurs.

JPMA's Actions

JPMA aims to create a safe environment, in which every worker, not limited to those at the factory or laboratory, can enjoy physical and mental health at work. JPMA conducts studies in occupational safety and business vehicle accidents and feeds back the information gained. JPMA has also started a study into the application of ergonomics in offices.

1. Links between the Occupational Safety and Health Management System and the Incidence of Occupational Accidents

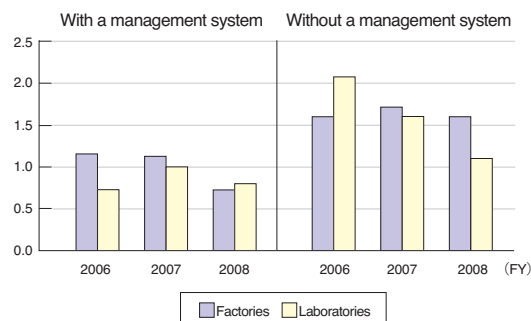
Our FY2008 study of occupational incidents resulting in injury received responses from 55 companies covering about 298 business establishments. The overall frequency rate* was 0.86 and, when compared to the outcomes in FY2006 (1.22) and FY2007 (1.01), shows an annual improvement. No major change in the trend was noted among the 90 business establishments (30%) that have introduced an occupational safety and health management system.

The incidence of accidents in factories with a management system was 0.75 while among those without one it was 1.57. In addition, the incidence among laboratories with a management system was 0.8, while among those without one it was 1.09. Those results clearly show the effect of introducing a management system. On the other hand, there was no such trend found among offices.

We also continued from last year the compilation of case studies of occupational incidents that occurred in our member companies.

Forty-two companies provided information about 80 cases. We intend to collate this information alongside that from last year into a JPMA Occupational Incident Case Study Reference so that the members receive feedback and can utilize it to prevent future incidents.

Occupational Incidents in Factories and Laboratories



*Frequency rate = (No of occupational injuries and deaths / Total hours actually worked) x 1,000,000

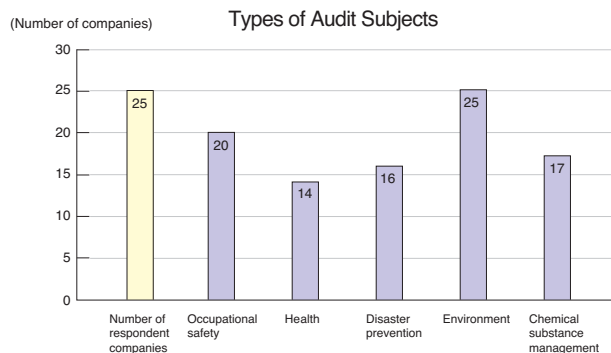
2. Environment, Health & Safety (EHS) Audits

We conducted a study of the current status of EHS audits in the JPMA membership and asked about the method and content of the audits of each firm. We received responses from 40 Japanese companies and 16 overseas affiliated companies. Twenty-one, about a half of Japanese companies (53%), implement an audit. Four overseas affiliated compa-

nies (25%) conduct their own audit specific to Japanese business in addition to an audit from their host country. The following are excerpts from the compiled results of the responses from these 25 companies. Note that among the 21 Japanese firms in the study, 6 companies (29%) conducted audits on their overseas offices.

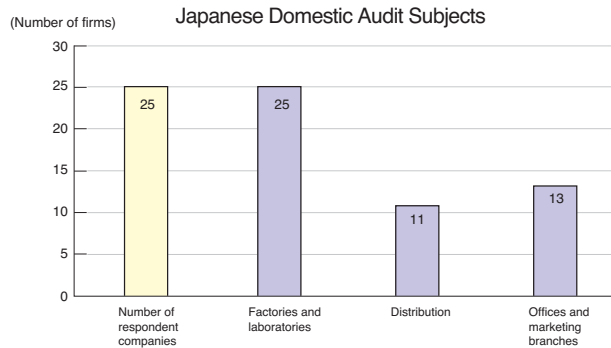
Types of Audit Subjects

All member companies who responded said that the environment is one of their audit subjects (25 firms; 100%). Others included occupational safety (20 firms; 80%), chemical substances management (17 firms; 68%), disaster prevention (16 firms; 64%) and health (14 firms; 56%).



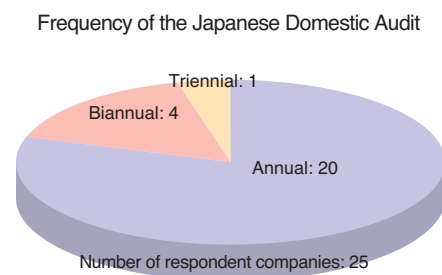
Japanese Domestic Audit Subjects

All the 25 firms included factories and laboratories as the subjects of their audits. Thirteen companies (52%) also included offices; while 11 companies (44%) included their distribution division in their audit subjects.



Frequency of the Japanese Domestic Audit

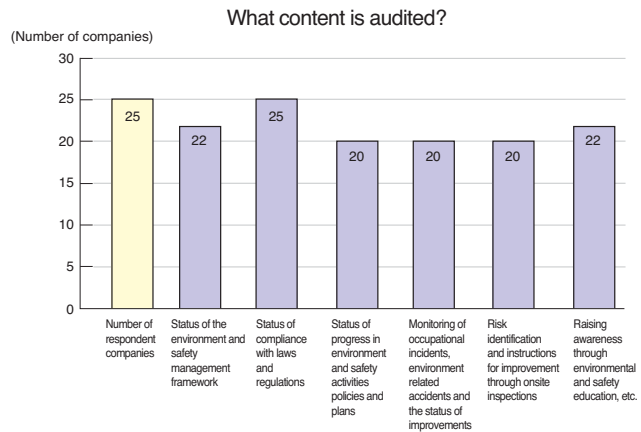
While 14 companies have fewer than 10 business establishments subject to audit, three companies have over 51 business establishments. This makes a simple one on one comparison unfeasible. Still 20 out of the 25 firms (80%) conducted an annual audit of their main business establishments.



Contents of the Audit

Generally speaking, most firms have developed audit rules (22 firms; 88%) and/or an annual audit plan (24 firms; 96%) and conducted their audits accordingly.

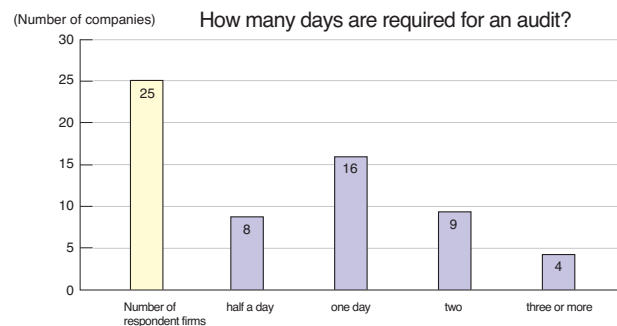
The item that most focused on was the status of compliance with laws and regulations (25 firms; 100%). Other items that were emphasized were the system of management, education and improving awareness (22 firms; 88%), promotion of activity policies and plans, matters related to accidents, onsite inspections (20 firms; 80%).



Method of Audit

The methods of audit reported include: investigation of documentation (23 firms; 92%) based on a checklist (23 firms; 92%), interviews; inspection of documentation and records; onsite inspections (all 25 firms; 100%).

Many firms varied the number of days spent for audit according to the size of and risks at particular business establishments. Sixteen firms spent one day, nine spent two days and eight spent half a day, while four firms spent three or more days.



Audit Reports

The results of audits are reported back to the concerned business establishments (25 firms; 100%), as well as the internal audit division (7 firms; 28%) and the Chief Auditor (4 firms; 16%).

The contents of the report included summary comments (25 firms; 100%) and improvement orders or requests (25 firms; 100%), as well as

evaluation scores and rankings (11 firms; 44%). The size of the audit report was five pages or less at most firms (19 firms; 76%); though two firms had reports larger than 11 pages.

Occupational Safety and Health Management

3. Business Vehicle Accidents

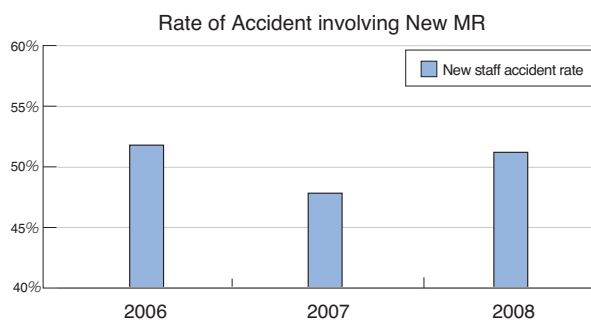
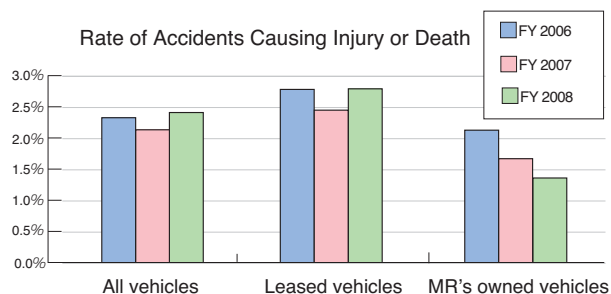
A motor vehicle is an essential tool for medical representatives. A survey was conducted to investigate the state of motor vehicle use in relation to the circumstances of vehicle accidents and motor vehicle safety measures taken. The responses turned in by 47 Companies (for a little over 47,000 vehicles) were then analyzed.

State of Accidents

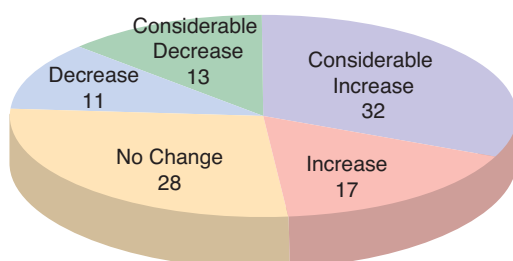
The mean liable accident rate (number of accidents/total number of vehicles) was 20.3%, showing an increasing trend over the past three consecutive years. The rate of accidents resulting in injury or death was 2.4%, which is the same level of FY 2005.

With regard to the causes of increased accidents, many companies stated an increasing number of young (especially newly graduated) medical representatives with little driving experience. Undeveloped driving skills are thought to be the cause of accidents. Each company has strengthened the training during new staff orientation. Accident rate was 51.26%, which was a little smaller than that of FY 2006. Each company has been concerned for the increasing trend of accident rate, participating in the active discussion on the accident prevention at the "Business Vehicle Accident Prevention Study Group" established this year.

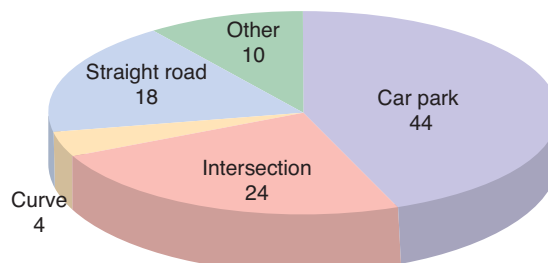
Over half of the accidents were minor and took place inside car parks, and the next highest type of accident involved rear-end collisions at intersections.



Trend of Accident (against to FY 2007)



Location of Accident

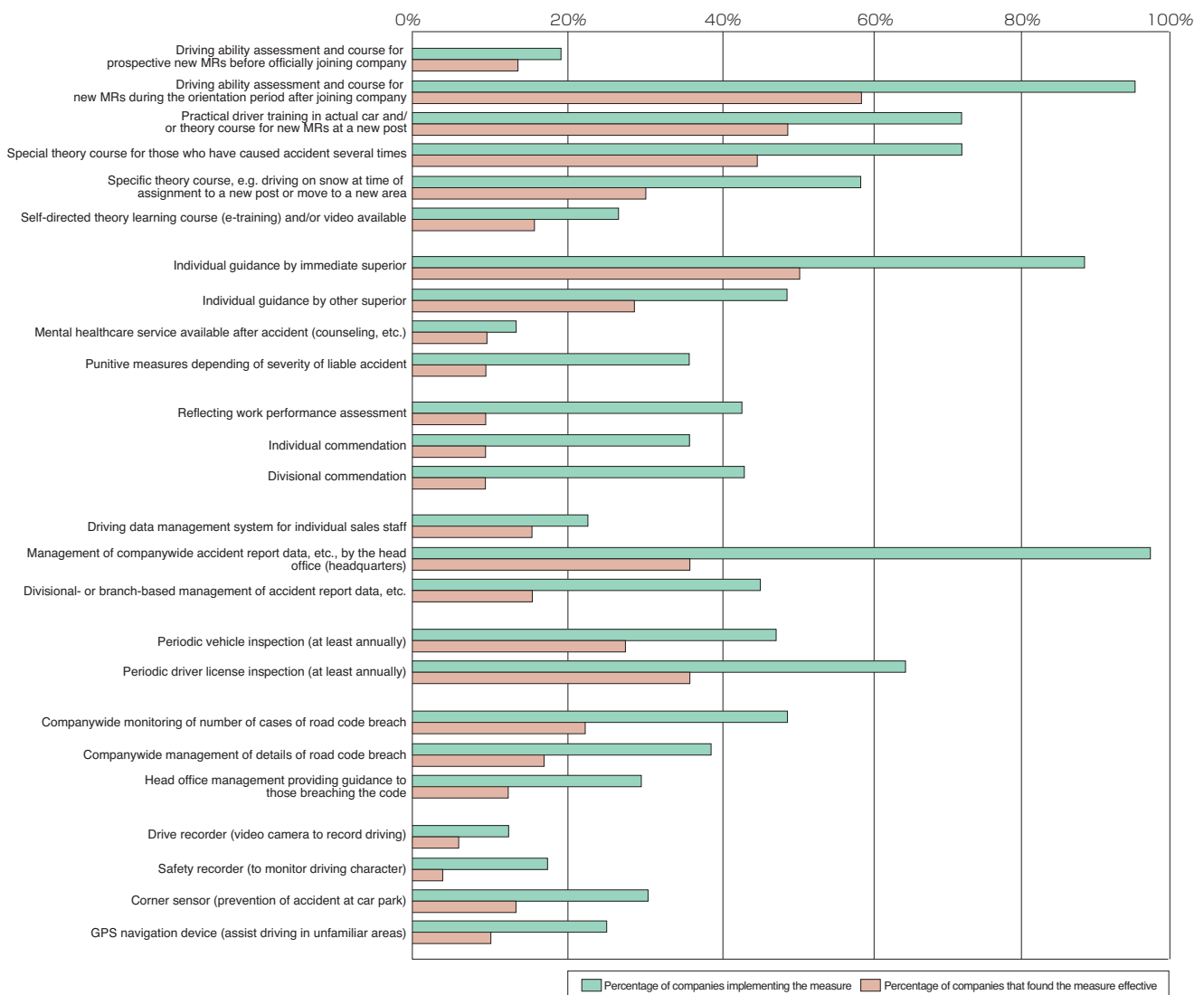


Safety Actions

In terms of safety measures, many companies run a special training course as part of their new MR work orientation or when an MR is moved to a new area, and/or they provide individual guidance by an immediate superior. The companies, which introduced analysis and feedback system of MR's accident information and driving records, actually feel its effectiveness to prevent accidents. It is important to continue these measures, and tailor them to the individual MR when appropriate.

More companies have also introduced a "corner sensor" and a "drive recorder" which exhibit some visible effect as a tool to reduce accidents in car parks. Their effect on reduction of the accident rate is expected.

	Introduced in FY 2008	Plan to introduce	Total Number in FY 2008	Introduced in FY 2007
Drive recorder (Drive video recorder)	6	12	18	5
Corner sensor (prohibit the accident at parking area)	14	6	20	11



Study Group
Activities

Business Vehicle Accident Prevention Study Group

The JPMA questionnaire survey for FY2008 found the accident rate for our business vehicle fleet (number of at fault vehicle accidents in FY2007/number of vehicles; compiled from responses from 54 companies) to be 19.3%. This figure seems exceedingly large when compared to the at fault accident rate for all industries and business types. In addition, reflecting the car-less trend in the younger generation in recent years, there are more “paper drivers (drivers in name only)” among newly recruited medical representatives (MRs), which seems to be contributing to raising the accident rate. Though the vehicle fleet managers at the respective companies worked hard to implement their accident prevention measures to fight these trends, in reality their efforts are not leading to immediate accident prevention.

In response to this situation, the Occupational Safety and Health Group launched its Business Vehicle Accident Prevention Study Group. This group has been in action since this fiscal year with 24 members from 17 companies. The following are the main actions taken by this study group.

- Detailed review of the FY2008 questionnaire survey study and its outcomes (Achievement report)
- FY2009 questionnaire survey and data analyses
- Case study presentations by the respective firms (accident prevention measures, accident cases and responses, ideas for future countermeasures, etc.)
- Suggestions for accident prevention management (presentation by a consulting firm)
- Cases of the effective use of the drive recorders (presentation by a drive recorder distributor)
- Experiencing driving safety techniques (attended a course at the Honda Suzuka Circuit)

Vigorous discussions by the attending companies took place at every session listed above, which facilitated the sharing of accident prevention related information. Each company will learn from the various effective accident prevention measures presented by the respective companies and apply the know-how in their future safety activities. The contents of these discussions will be included in this year's Achievement report published for JPMA member companies.

Given the current situation, it appears difficult to reduce accidents in business vehicles used by the MRs by a large margin. However accidents cause major monetary, psychological as well as physical damage to not only the victims, but also all those involved, including the company concerned. We hope our study group activities will help avoid such unfortunate events even by a little.

TOPICS

Office Ergonomics

The JPMA Environment and Safety Committee has conducted various research studies in areas such as health screening and efforts for mental health care at our member companies, with the purpose of providing information for creating a healthy and safe work place environment. Though the action to prevent lifestyle diseases has progressed as seen in the specified health screening and specified health guidance initiatives started last year, in order to maintain an adequate work environment, we need to shift our focus to work related fatigue and stress, which are not necessarily picked up in the health screening.

MHLW recently published the “2008 General Survey of the State of Technological Advances and Labor - Summary of the Results”. This is the summary of the five yearly surveys on the status of IT devices used at workplaces and the impact of IT device use on the workers. The survey found that just under 90% of the workers (excluding the workers in production processes and manual labor) use IT devices. Nearly a half worked at a visual display terminal (VDT), such as a personal computer, for four hours or longer. Just under 70% of the workers reported physical complaints such as eye fatigue, sore eyes, stiffness in the neck and/or shoulders, etc; while over 30% of workers reported mental fatigue and stress. Moreover nearly 70% of the workers requested a better operational environment, such as “securing sufficient work space and optimizing the layout”: “better desk, chair and floor conditions (device wiring)”; and so on. These outcomes indicated there has not been much progress since the 1998 survey. Despite MHLW developing “Guidelines for occupational safety and health management in VDT operations” in 2002, the results suggest that the guidelines were not being used effectively.

In response to this trend, the Occupational Safety and Health Subcommittee of the JPMA Environment and Safety Committee this year employed an ergonomic perspective, in which devices and a work environment are adopted that facilitate the natural movements of the human body. We have decided to develop suggestions to adjust the work environment through the positioning of VDT devices, lighting, desk and chair height adjustment, optimization of operator posture, etc. We plan to provide our work in this area to our members including commentaries based on the above guidelines, solutions to the issues and a checklist for actual use in offices. Computers are now an essential part of clerical work. We do need to embrace office ergonomics in order to create a comfortable work environment for our workers.



Correct posture for using a personal computer

Harmonization with Society

Partnership with the Federation of Pharmaceutical Manufacturers' Associations of Japan

Efforts by the Federation of Pharmaceutical Manufacturers' Associations of Japan

The Federation of Pharmaceutical Manufacturers' Associations of Japan (FPMAJ) established an environment committee in October 2007. Among the issues surrounding the entire pharmaceutical industry, either the sector handling prescription drugs for medical care or the OTC drug sector, the prevention of global warming and the reduction and proper processing of waste were the main issues assigned to the committee.

The FPMAJ Environment Committee consists of members nominated by the Japan Pharmaceutical Manufacturers Association (JPMA), the Japan Generic Pharmaceutical Manufacturers Association (JGPMA)

and the Japan Self-Medication Industry (JSMI). At regular committee meetings, comprehensive discussions across the industry take place around the following issues, aiming to higher level of environmental preservation activities in the pharmaceutical industry.



Mr. Seishi Takenawa
Chairman,
Environment Committee, FPMAJ

Action Plan of Federation of Pharmaceutical Manufacturers' Associations of Japan

Global Warming Prevention

- Implement the Keidanren Voluntary Action Plan on the Environment (Global Warming Prevention Edition) Follow-Up Action to promote the monitoring of energy use and the CO₂ emissions level; as well as the sharing and utilization of energy saving technologies and information
- As well as responding to the investigation and review by the Ministry of Health, Labour and Welfare to the Voluntary Action Plan, endeavor to strengthen the regime of collaboration by industry bodies and the development of concrete measures.

Resource conservation and Waste Management

- Implement the Keidanren Voluntary Action Plan on the Environment (Sound Material Cycle Society Edition) Follow-up Action; as well as to promote sharing and providing information on waste reduction, recycling and proper disposal
- To continue collecting and providing information concerning the proper processing of the general medical waste generated from the use of drugs, as well as to make efforts in maintaining good relationships with various stakeholders, such as medical professionals.

Progress of Actions for Global Warming Prevention

In conjunction with the Keidanren Voluntary Action Plan on the Environment (Global Warming Prevention Edition), FPMAJ and JPMA have taken part in the Voluntary Action Plan Follow-Up Action (voluntary setting of numerical CO₂ emissions reduction targets for the pharmaceutical industry and efforts to attain the target) since 1997. The number of firms taking part has increased from 66 companies in the FY2007 investigation (investigation of FY2006 performance) to 97 companies in the FY2008 investigation (investigation of FY2007 performance) and 101 companies in the FY2009 investigation (investigation of FY2008 performance).

Investigation and Review by the Japanese Government

The Follow-Up Meeting created by the Ministry of Health, Labour and Welfare conducted the second investigation and review process on FY2007 performance in January 2009. The Meeting strongly requested continuous efforts to attain the target.

FY2008 Performance

Although the FY2008 performance was over the target level by approx. 7.0% (115,000 tons), it was a considerable reduction of 21% (347,000 tons) from that in previous fiscal year.

Future Efforts

Encouraged by the major CO₂ emissions reductions found by the FY2009 investigation, we will further strengthen the framework for cooperation between JPMA, JGPMA and JSMI to continue this trend.

Progress of Actions for Resource conservation and Waste Management

Response to the Keidanren Voluntary Action Plan for the Environment (Sound Material Cycle Society Edition)

JPMA has participated in the Keidanren Voluntary Action Plan on the Environment (Sound Material Cycle Society Edition) Follow-up Action since 1998 (104 firms taking part). FPMAJ has set three voluntary action plan targets, "industrial waste generation", "final disposal volume of industrial waste" and "final disposal rate of industrial waste" and worked toward the FY2009 investigation that confirmed the targets were attained for "target of final disposal volume of industrial waste" and "target of final disposal rate of industrial waste"; though the "target of industrial waste generation" target was still exceeded. We will continue to advance toward attaining the numerical target through the promotion of information sharing.

General Medical Waste Management Actions

As a part of efforts in the proper processing of medical waste generated at homes through home based care or outpatient treatment, especially the proper processing of aerosol and disused drugs, we conducted investigations on information handling from the manufacturer's point of view, as well as working to promote information sharing with national and local governments and industrial organizations concerned.

Harmonization with Society

■ Environmental Activities of the Japan Self-Medication Industry



Mr. Yoshiyuki Komatsu
Councillor,
Environment Affairs Council, JSMI

Following the establishment of their Environment Committee at the Federation of Pharmaceutical Manufacturers' Associations of Japan (FPMAJ), the Japan-Self Medication Industry (JSMI) Environment Affairs Council established a subcommittee for global warming prevention and waste management, in order to fulfill our obligations as OTC medicine manufacturers to take action mainly on global warming and on waste management.

JSMI sends two members to the FPMAJ Environment Committee. They work in cooperation with the committee members recommended by the Japan Pharmaceutical Manufacturers Association (JPMA) and the Japan Generic Pharmaceutical Manufacturers Association (JGPMA) to take action to address the issues common to the pharmaceutical industry. The information gathered is then shared in JSMI in the members' efforts for the environment.

■ Global Warming Prevention and Waste Management Subcommittee meeting

The JSMI Environment Affairs Council was briefed on the purpose of establishing the working group. Following the inaugural working group meeting, which saw the selection of the leader and deputy leader, it established a structure in readiness to tackle the issues.

■ Reporting of the FPMAJ Environment Committee

We will report the contents of FPMAJ Environment Committee meetings and, with an understanding of current state of the pharmaceutical industry, will consider JSMI's own action policy.

■ Request to participate in follow-up action for the Voluntary Action Plan

It was decided to request JSMI member companies that are not a part of the Environment Affairs Council to participate in the studies on CO₂ emissions and waste disposal output. The targets of this request are to be companies that own an energy management designated factory, in order to focus on firms with high levels of CO₂ emissions and waste disposal output. As a result of repeated requests for participation, four more companies have decided to take part.

■ Grasp volume of CO₂ emissions and waste disposal as JSMI

An effort was made to monitor CO₂ emissions and waste disposal output levels as JSMI. It was confirmed the efforts for reduction will be continued until the FPMAJ targets are attained.

■ Attendance at various seminars

Taking advantage of the information sharing opportunities that the FPMAJ Environment Committee provides, we had members attend environmental issue seminars hosted by the FPMAJ, JPMA or JGPMA in an effort to collect information.

Collaboration with Other Committees

Efforts for Drug Environmental Risk Assessment Drug Evaluation Committee



Mr. Kazuichi Nakamura
Drug Evaluation Committee,
JPMA

Pharmaceutical ingredients, discharged after use, have been detected in the natural environment such as rivers 1). In addition, recently, several pharmaceutical ingredients have been, however miniscule the quantity, reported as remaining in the public water supply. The Japan Pharmaceutical Manufacturers Association has taken actions since 2003 to address this issue and to fulfill our part of the social responsibilities. The Basic Research Subcommittee within the Drug Evaluation Committee has taken the central role in handling of this issue by developing and reviewing the draft environmental risk assessment system and considering possible policy lobbying.

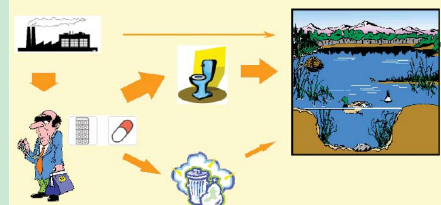
Following the example of the EU and the US, it is expected that guidelines for the assessment of the effects of drugs on the environment will be developed. As well as working to assist the efforts of the MHLW team in the development of the guidelines, the Basic Research Subcommittee takes initiative in various proactive actions, such as exchanging information with overseas industry bodies, attendance at various related academic societies and international conferences, hosting of seminars with expert speakers invited from within Japan and overseas, submitting articles to scholarly publications 2), and other actions.

Considering that drugs are now an essential part of our daily life, we believe it is our crucial mission to ensure that our medical professionals and patients can use drugs without any concern about their environmental impact.

[Reference]

- (1) Fent, K., et al.: Ecotoxicology of human pharmaceuticals, *Aquatic Toxicology*, 76, 122-159 (2006).
- (2) Yasuyoshi Azuma Effects of Pharmaceuticals in the Environment and the Actions of the pharmaceutical industry, *Journal of Water and Waste*, No 50, 621-627, 2008

How Do Pharmaceuticals Reach The Environment ?



TOPICS

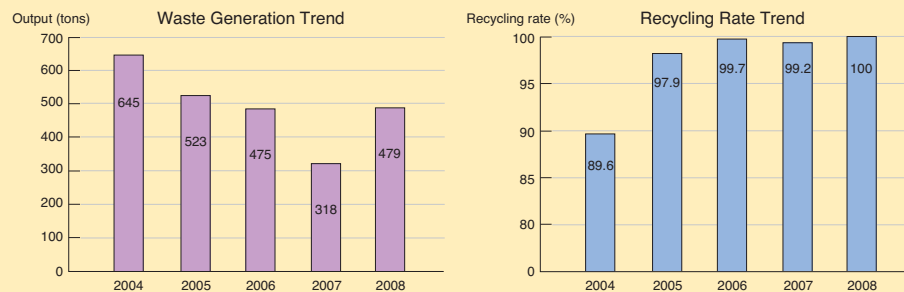
SSP, Co., Ltd. (JSMI member) received "The Health, Labour and Welfare Minister Award for contribution to Promoting the 3R" ~Efforts for the 3R at the Narita plant of SSP, Co., Ltd.~



Mr. Nobuo Odajima
SSP, Co., Ltd.

The Narita Plant started operations in 1964 in the City of Narita, a temple town of Narita-san Shinsho-ji Temple, as the first firm to be invited to build a plant. We have been inspired to become a park-like factory and gradually expanded our production facilities to the current level. Our plant implemented pollution prevention measures right from the beginning of our operations. We acquired ISO14001 certification in 1998, the first in the industry.

Since then we have made company-wide efforts on the 3R activities utilizing our environmental management system. Our actions have achieved gradual and visible outcomes and we attained a 100% rate of recycling in FY2008.



* Due to the change in the account closing date, the data for FY2007 covers the 9-month period (from April to December)
* Waste generation volume in FY2008 is 25.7% less compared with the FY2004 performance

Our Actions

(1) Reduce

Our actions include reducing product defects in the manufacturing process and waste reduction through a review of packaging materials. For example, previously we used 200 to 300 kg worth of external boxes (case type box containers) annually. We switched to plastic-wrapped packaging for all our products in 2007, which contributed substantially to a reduction in waste in the distribution process.

(2) Reuse

- 1 We reuse the fiber drums used for the transportation of materials to collect coarse particulate waste accumulated in the dust collector (480 drums annually).
- 2 We reuse the absorber inside cardboard boxes in the dispatch of materials (300 kg annually).

(3) Recycle

- 1 Through sorting of refuse and the selection of a disposal contractor, we achieved a 100% recycling rate for industrial and general waste generated at the Narita Plant since FY2008. This performance is still continuing.
- 2 We have a contract with a manufacturer to return defective glass and plastic containers picked up at the bottle-line for recycling.

In addition to the 3R actions described above, the waste reduction volume is reported monthly to the Environment Management Committee. We also place emphasis on motivational education such as through promotion of the sorting, having the workers report their environmental activities at home to promote environmental action in the home, etc.

Training and Motivation

The JPMA Environment and Safety Committee intends to raise awareness and find efficient solutions to the issues through the facilitation of information sharing among the JPMA members, by hosting seminars and technical training courses with invited outside speakers, as well as through the presentation at courses and workshops of case studies of the members' actions in protecting the environment. The Committee also

issues a periodical publication, "Environment News", conducts various studies on JPMA members' action for the environment and occupational safety and health and compiles these into booklets, etc., and distributes the information collected from the member companies.

Studies and Reports

The Environment and Safety Committee General Assembly is held annually in April to discuss and determine an annual action plan concerning Environment and Occupational Safety and Health related matters for the streamlined implementation of these actions. The respective Technical Subcommittees conduct questionnaire surveys, etc., to monitor progress in attaining the targets and to identify issues and tasks, and also prepare

report(s) of the outcomes as a form of feedback to the member companies. The committee also takes part in the Keidanren Voluntary Action Plan (both the Global Warming Prevention Edition and Sound Material Cycle Society Edition), through follow-up studies on the state of progress and action by the members; compiling the data and information obtained into a report and periodical reporting this back to Keidanren.

Publication of Environmental Reports

The Environment and Safety Committee has published annually from FY1999 an Environmental Report to provide a summary of our members' efforts and actions for the environment and occupational safety and health. The Environmental Report discloses information about the pharmaceutical industry's efforts for the environment and occupational safety and health as a means to fulfill our responsibility to provide an explanation to the stakeholders. The report is also expected to be a tool for communication between the member companies and the society.



Publication of "Environment News"

The Environment and Safety Committee issues "Environment News", which includes summaries of Environment and/or Occupational Safety and Health related Seminars and Technical Training Courses for easy access by member companies. This information is uploaded to PRAISE-NET, the intranet shared between the Federation of Pharmaceutical

Manufacturers' Associations of Japan, the Osaka Pharmaceutical Association and the Tokyo Pharmaceutical Association, so that the information is widely distributed in the pharmaceutical industry.

Publication of Achievement Reports

The Environment and Safety Committee organizes the information obtained through various research activities conducted by the respective technical groups, or at lectures, seminars and Technical Training Courses, and collates it into a CD-ROM for distribution to the member companies. This arrangement enables members to access a wide range of information about the seminars, technical training courses, or other occasions that

their personnel were not able to attend. This is a means for the respective member companies to find information about the activities of the Environment and Safety Committee and to apply it effectively in their own activities. It should be noted that this Achievement Report is created through the cooperation and understanding of many lecturers and speakers at the seminars, Technical Training Courses, etc.

Hosting of Environment & Safety Seminars and Technical Training Courses

The Environment and Safety Committee runs seminars for administration and management staff involved in the Environment and Occupational Safety and Health related business operations once a year. These seminars have external lecturers and speakers, and are an occasion to acquire the latest information on environmental issues, occupational safety and health, CSR-related matters and others. On the other hand, the

Technical Training Courses are designed to promote our activities and to facilitate exchanges and the sharing of technological expertise and management knowhow related to environmental or occupational safety and health issues, as well as to provide opportunities to learn through case studies on the actions implemented by the respective member companies.

Study Group Activities

The respective JPMA expert subcommittees have study groups in which the member companies that are not part of expert subcommittees can still contribute in areas that require technical expertise.

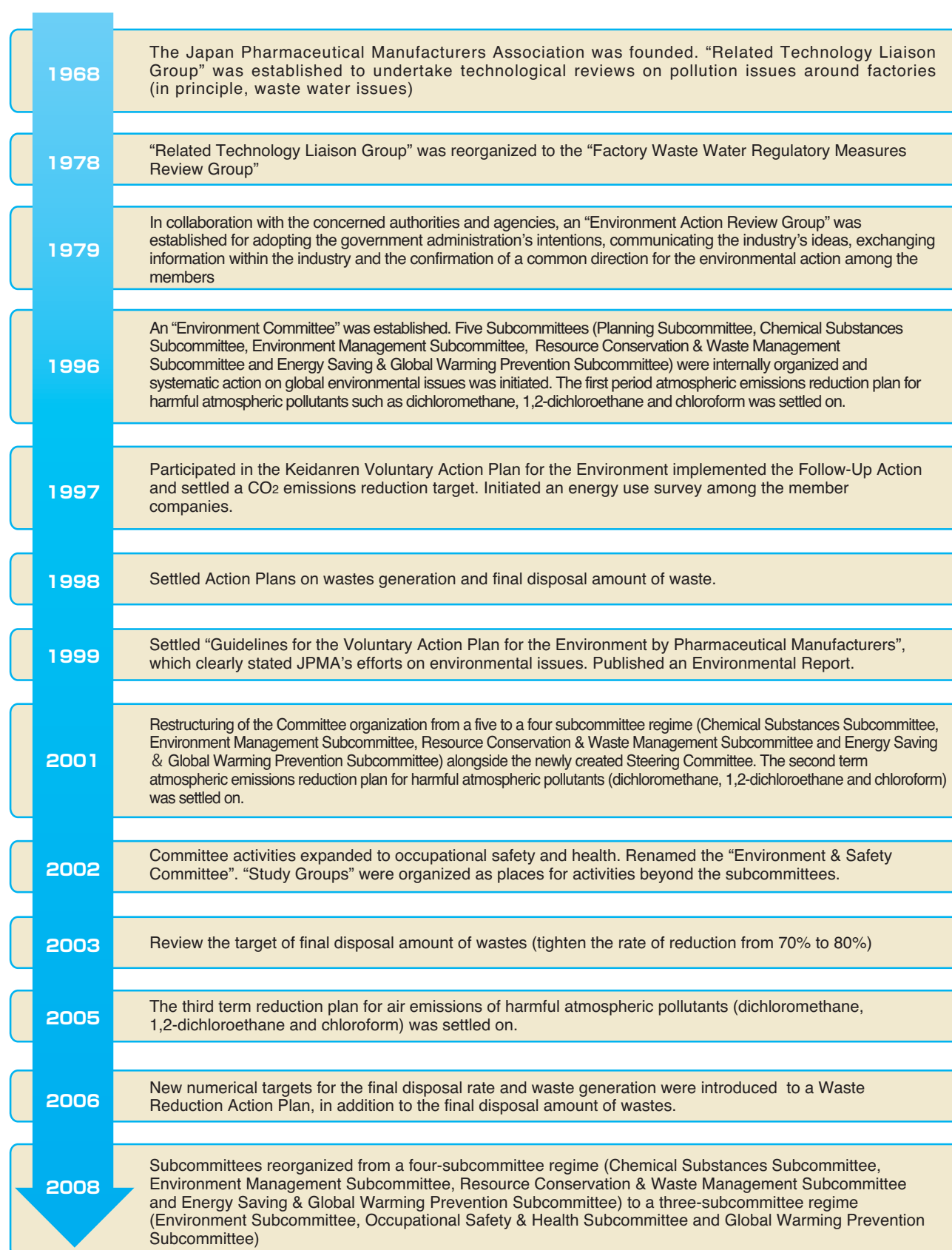
Currently three study groups have been established and are working

actively. They are: the "Kyoto Protocol Comprehensive Action Study Group", the "Process Safety Study Group" and the "Business Vehicle Accident Prevention Study Group".

Seminars, Lectures and Technical Training Courses Held between December 2008 and November 2009

The 33th Environment and Safety Lectures (April 2009)			
Environment Safety Risk Management by pharmaceutical manufacturers In readiness for global business expansion	Mr. Tatsuya Noma ERM Japan		Commentaries on environmental, safety and social risks that surround the pharmaceutical industry through actual cases, cases of global environmental safety management by pharmaceutical manufacturers, and steps toward developing a global environmental management system. Suggestion about what a Japanese pharmaceutical company should aim for in such a situation.
Environmental Risk Assessment of chemical substances	Mr. Akihiro Tokai Osaka University Graduate School of Engineering		Environmental Risk Assessment of chemical substances; use of risk assessment, necessity of risk governance, application of risk assessment in chemical substance management, commentary on actual cases of assessment. Improvements in the scientific accuracy of risk assessment and its social reliability are demanded. However for this purpose, we must move on to become an autonomous society that can understand the meaning of risk management and make choices.
Technical Training Course (June 2009)			
What is a Work Life Balance? Its importance as a business management strategy and how to implement it	Ms Makiko Otsuka Work Life Balance		Japanese society is suffering from the aging of the population and a low birth rate. Here a work life balance is becoming ever more important in order for businesses and workers to develop a win-win relationship. Commentaries on how to practice and achieve this balance through everyday life and work. Specific comments how to practice it at work, and the ideas and skills required.
Study of Undesirable Organizational Behaviors	Mr. Haruhiko Higuchi Police Policy Research Center/Police College		Among the recent accidents and undesirable incidents, cases of the Mitsubishi Heavy Industries cruise liner fire and the JOC critically accident were discussed; including thorough analyses of the behavior of the people that worked in the organizations, organizational and structural issues and the chain of events leading up to the accidents, how the management should have operated was explained.
The 13th Energy Saving/Global Warming Prevention Technology Training Course (October 2009)			
Actual Cases of the Effective Use of Heat Pumps in a Pharmaceutical Company	Mr. Momoki Katakura Japan Society of Refrigerating and Air Conditioning Engineers		Commentaries on the current state of global warming, the need for and usefulness of heat pump technology and technological advances from the perspective of a pharmaceutical firm introducing heat pump technology as a heat source. Including actual cases.
Trends Surrounding Emissions Trading	Mr. Tsutomu Sasaki The Japan Research Institute, Ltd.		The direction of the discussions about the Post Kyoto international framework; trends in emissions trading schemes in the EU and the US; and based on these situations, the future direction of emissions trading schemes is discussed in terms of the trends in legislation, political changes, industrial voluntary action plans, and other viewpoints.
On Future Energy Saving Policies for a Low Carbon Society	Mr. Akihiro Matsuta Agency for Natural Resources and Energy; Ministry of Economy, Trade and Industry		Forecast of world energy demand and a commentary on changes in energy consumption in Japan; followed by commentaries on energy saving measures applied in Japan, amendment of the Energy Saving Act, how to interpret the benchmark indicators, the top runner system and the system of assistance from the government. In addition, it included commentaries on a summary of the reality and developments in new energy measures such as the next generation heat pump systems research committee and the zero emissions bill.
Current State of Global Warming Prevention and Action by the Ministry of the Environment	Mr. Yusuke Kusakawa Climate Change Policy Division Global Environment Bureau Ministry of the Environment		Commentaries on the status of international negotiations on global warming issues; various actions implemented within Japan; the trends within and outside Japan concerning emissions trading schemes, the status of renewable energy within and outside Japan, Eco housing, etc., as well as the policies for building a low-carbon society (technological developments, framework and government assistance for such efforts).
Second follow up action for the Voluntary Action Plan for the Environment and the future	Mr. Kotaro Kaino Office of Labor Policy Councilor for Director-General for Policy Planning and Evaluation Ministry of Health, Labour and Welfare		Commentary on an outline of the report published by the follow-up council, following the second follow-up (January 26, 2009) by the MHLW for the Voluntary Action Plan for the Environment (Global Warming Edition).
Waste heat collection and the introduction of a steam-less system	Mr. Kazuo Abe Eisai Co., Ltd		Commentary on heat collection and steam-less air conditioning systems as a part of developing efficient air conditioning systems in a laboratory. For the efficient operation of air conditioning units, variable wind speed control and air conditioning systems using ventilation inverters were introduced. Humidifiers have also been switched from steam-based humidifiers to pervaporation based humidifiers.
Introduction of an LNG Satellite Unit and Air Cooling Heat Pump Modules	Mr. Minoru Hirozumi Mochida Pharmaceutical Co. Ltd.		As an energy saving measure, the boiler fuel was switched from diesel to LNG and air cooling heat pump modules were introduced at the main factory (a drug manufacturing factory), which also produced a CO ₂ reduction effect.
Cost Effective Measures through the "Soft" or "Hard" Approaches	Mr. Takayuki Nagai Global Warming Prevention Subcommittee, JPMA		From the energy saving case studies (information provided by JPMA members) published by JPMA, cost effective measures using hard or soft approaches were introduced, including heat conservation measures such as steam piping, the energy saving V belt, improving air conditioning efficiency using reed sun screens over windows, reduction in the number of hours of operation of air conditioners and compressors, energy saving actions by all, etc.
The 16th Environment and Safety Seminar (November 2009)			
On Guidelines for Private Participation for Biodiversity How a business addresses biodiversity conservation and sustainable use	Mr. Toshio Torii Biodiversity Policy Division, Nature Conservation Bureau, Ministry of the Environment		Biodiversity Treaty, national strategies for biodiversity and moves within and outside Japan; and the tenth meeting of the Conference of the Parties (COP 10) were explained, followed by commentaries on an outline of the Guidelines for Private Participation for Biodiversity published in August 2009.
Global warming issues; from discussions to action Towards a low-carbon society	Mr. Hiroshi Komiyama Mitsubishi Research Institute Inc.		Towards attainment of the announced global warming prevention target of a 25% reduction from the FY1990 level of CO ₂ emissions, a theoretical explanation of efforts in everyday life (at home, in offices and transport) and manufacturing, based on Energy Engineering, etc. Plus suggestions on town building, etc., for the aging society.

History of Environmental & Safety Initiative



Progress of Our Voluntary Action Plans

Area of Action	Year of Planning	Action Plan Contents	Year Attained
Action for Resource Conservation and Waste Management	FY2001 (First Term Plan)	Final disposal amount: 70% reduction against that in FY1990	FY2002
	FY2003 (Second Term Plan)	Final disposal amount: 80% reduction against that in FY1990	FY2005
	FY2006 (Third Term Plan)	Final disposal amount: 80% reduction in FY2010 against that in FY1990 Final disposal rate: 5% or less in FY2010 Waste generation: 10% reduction in FY2010 against that in FY1990	FY2007
Chemical Substance Management	FY1996 (First Term Plan)	Dichloromethane: 30% reduction compared to the amount in FY1995 1,2-dichloroethane: 30% reduction compared to the amount in FY1996 Chloroform: 30% reduction compared to the amount in FY1996	FY2000
Action to control Air Emissions	FY2001 (Second Term Plan)	Dichloromethane: 60% reduction compared to the amount in FY1995 1,2-dichloroethane: 50% reduction compared to the amount in FY1996 Chloroform: 30% reduction compared to the amount in FY1996 Formaldehyde: reduction efforts Benzene: reduction efforts Tetrachloroethylene: reduction efforts Acetonitrile: reduction efforts	FY2004
	FY2005 (Third Term Plan)	Dichloromethane: 20% reduction compared to the amount in FY2003 1,2-dichloroethane: 20% reduction compared to the amount in FY2003 Chloroform: 20% reduction compared to the amount in FY2003	FY2007
Global Warming Prevention	FY1997	Control the total CO ₂ emissions in FY2010 to below that of the baseline level in FY1990	Ongoing

Members of Planning Conference and Steering Committee of Environment & Safety Committee

Steering Committee	Planning Conference	Chairperson		Michio Sato	EISAI CO., LTD	
		Deputy Chairperson		Akihiro Tasaka	TAKEDA PHARMACEUTICAL COMPANY LIMITED	Tadashi Nishikimi
			Satoru Kobayashi	DAIICHI SANKYO CO., LTD.	Seishi Takenawa	ASTELLAS PHARMA INC.
Expert Subcommittees	Environmental	Chairperson	Tadashi Nishikimi	PFIZER JAPAN INC.		
		Deputy Chairperson	Akiyuki Tosaka	CHUGAI PHARMACEUTICAL CO., LTD.		
	Occupational Safety & Health	Chairperson	Motoki Fujimura	mitsubishi tanabe PHARMA CORPORATION		
		Deputy Chairperson	Naomi Takahashi	GlaxoSmithKline K.K.		
	Global Warming Prevention	Chairperson	Takeshi Oigawa	MEIJI SEIKA KAISHA, LTD.		
		Deputy Chairperson	Takashi Nishikawa	BAYER YAKUHIN, LTD.		
Member nominated by Chairperson			Junichi Taniguchi	OTSUKA PHARMACEUTICAL Co., Ltd.		
Secretariat			Akira Kusai	JPMA		

JPMA Member Companies (listed in alphabetical order): 69 Companies as of October 2009

ABBOTT JAPAN CO., LTD.
AJINOMOTO CO., INC.
ASAHI KASEI PHARMA CORPORATION
ASKA PHARMACEUTICAL CO., LTD.
ASTELLAS PHARMA INC.
AstraZeneca K.K.
BANYU PHARMACEUTICAL CO., LTD.
BAXTER LTD.
BAYER YAKUHIN, LTD.
BRISTOL-MYERS K.K.
The CHEMO-SERO-THERAPEUTIC RESEARCH INSTITUTE
CHUGAI PHARMACEUTICAL CO., LTD.
DAIICHI SANKYO CO., LTD
DAINIPPON SUMITOMO PHARMA CO., LTD.
EISAI CO., LTD.
ELI LILLY JAPAN K.K.
FUJIMOTO PHARMACEUTICAL CORP.
FUSO PHARMACEUTICAL INDUSTRIES, LTD.

GlaxoSmithKline K.K.
HISAMITSU PHARMACEUTICAL CO., INC.
JANSSEN PHARMACEUTICAL K.K.
JAPAN TOBACCO INC.
KAKEN PHARMACEUTICAL CO., LTD.
KISSEI PHARMACEUTICAL CO., LTD.
KOWA Company, Ltd.
KRACIE PHARMA, LTD.
KYORIN PHARMACEUTICAL CO., LTD.
KYOTO PHARMACEUTICAL INDUSTRIES, LTD.
KYOWA HAKKO KIRIN CO., LTD.
MARUHO CO., LTD.
MARUISHI PHARMACEUTICAL CO., LTD.
MEIJI SEIKA KAISHA, LTD.
MINOPHAGEN PHARMACEUTICAL CO. LTD.
MITSUBISHI TANABE PHARMA CORPORATION
MOCHIDA PHARMACEUTICAL CO., LTD.
MYLAN SEIYAKU LTD.

NIHON PHARMACEUTICAL CO., LTD.
NIPPON BOEHRINGER INGELHEIM CO., LTD.
NIPPON CHEMIPHAR CO., LTD
NIPPON KAYAKU CO, LTD.
NIPPON SHINYAKU Co., Ltd.
NIPPON ZOKI PHARMACEUTICAL CO., LTD.
NOVARTIS PHARMA K.K.
NOVO NORDISK PHARMA LTD.
ONO PHARMACEUTICAL CO., LTD.
OTSUKA PHARMACEUTICAL Co., Ltd.
PFIZER JAPAN INC.
POLA PHARMA INC.
sanofi-aventis K.K.
SANTEN PHARMACEUTICAL CO., LTD.
SANWA KAGAKU KENKYUSHO CO., LTD.
SCHERING-PLOUGH K.K.
SEIKAGAKU CORPORATION
SEIYU PHARMACEUTICAL CO., LTD.

SHIONOGI & CO., LTD.
TAIHO PHARMACEUTICAL CO., LTD.
TAISHO PHARMACEUTICAL CO., LTD.
TAKEDA PHARMACEUTICAL CO., LTD.
TEIJIN PHARMA Limited
TEIKOKU SEIYAKU CO., LTD.
TERUMO CORPORATION
TOA EIYO LTD.
TORII PHARMACEUTICAL CO., LTD.
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