ENVIROMENTAL REPORT

2008

Japan Pharmaceutical Manufacturers Association
Message

Message from the President,
Japan Pharmaceutical Manufacturers Association

We, the Japan Pharmaceutical Manufacturers Association (JPMA), are a body of 69 (as of October 2008) research and development focused pharmaceutical manufacturers. Our purpose is to improve the health and welfare of Japanese citizens and citizens around the world, through the development of innovative and highly efficacious pharmaceuticals and by facilitating growth of the pharmaceutical sector into a sound industry. This year, JPMA has celebrated its 40th anniversary since establishment in 1968. We are still true to our motto to “Realize patient-centered healthcare” in working to better health and medical care services worldwide through the development of groundbreaking new drugs.

For Japanese pharmaceutical manufacturers aiming to expand their overseas market and establish a better international position, it will become more essential than ever to address global issues with a proactive attitude, while maintaining international partnership. Future corporations will be required to act beyond the mere pursuit of “economic” success by taking action to control global “environment” issues, to ensure employee health and safety, and to actively fulfill responsibilities with regard to “societal” issues. In other words, we will have to accept our “corporate social responsibilities (CSR)”. For this purpose, we at JPMA will focus on three major areas of commitment, the “Economy”, “Environment”, and “Society”, and endeavor to achieve the “sustainable development” demanded of these industries in particular.

The JPMA “Charter for Good Corporate Conduct” was instituted in 1997. In 2001, the “Compliance Program Guideline” to facilitate Charter implementation was published. By ensuring that each member company is thoroughly informed of and familiar with the Guideline, JPMA has strived to maintain corporate ethics and strict observation of the statute. The “JPMA Charter for Good Corporate Conduct” identifies actions to address “global environment issues” with priority being on the industry’s “sustainable development” for “global sustainability”. We have a partnership with the Federation of Pharmaceutical Manufacturers’ Associations of Japan (FPMAJ) to implement the Follow-up to the Japan Federation of Economic Organization (Keidanren) Voluntary Action Plan on the Environment, which are a concrete example of our proactive efforts in energy saving and the prevention of global warming. Another such example is our actions in response to the Tokyo Metropolitan Government’s request to review the business vehicles used by medical representatives (MR). Our review started in February of this year and, is now a part of our measures to cut down CO2 emissions from sources other than our research laboratories and factories. We are also working towards a sustainable Sound Material Cycle Society by promoting actions for resource conservation and waste output reduction, including measures to save pharmaceutical related resources and efforts in finding solutions to waste disposal issues.

As a means of fulfilling our CSR and our obligation to protect the environment, the measures taken to prevent global warming continue to be our highest priority and we are working hard at their implementation. However, despite our efforts, due to growing research, development, and manufacturing activities, the total CO2 emissions from our member companies in fiscal year (FY) 2007 was 35% more than the baseline level for FY 1990. This means that if we continue to take the same level of action, it will be difficult to attain our goals. The current fiscal year is the first year of the first pledged period under the Kyoto Protocol (five years from FY 2008 to FY 2012), and we will continue to address the issues at hand through review of the current status, streamlining further efforts by respective JPMA member companies, and by taking more proactive and concrete action so as to reach the target. Incidentally, in July 2008, the Japanese Government hosted and chaired the G8 Summit at Hokkaido Toyako, during which global warming was the priority on the agenda. This is another indication of the current situation and it highlights that there should be no more delays in implementing measures to prevent global warming. We will continue our endeavor to address the issue, through review of current status, streamlining further efforts by respective JPMA member companies and taking more proactive and concrete actions so as to attain the targets.

JPMA aims to make the pharmaceutical industry into “an industry that contributes to health and medical care services worldwide” and “a transparent industry”. For these purposes, JPMA is engaged in lobbying to the appropriate ministries, etc., and conducting proactive public communication activities to make “patient-centered healthcare” a reality. As a part of this aspect, we are working hard to improve our communication with society through preparation and publication of the JPMA “Environmental Report” and through conversation with outside parties. We will continue to promote the disclosure of environmental, safety and health related information in an effort to facilitate reciprocal communication between JPMA and the stakeholders. We welcome your candid feedback and opinions regarding this publication and the matters discussed therein. Thank you for your understanding and support.
Message from the Chairman, Environment & Safety Committee

At the Hokkaido Toyako Summit held in July 2008, the former Prime Minister Yasuo Fukuda, also the chairman, issued the Chair’s Summary containing this statement concerning the environment and climate change, “We also recognized the importance of tackling environmental issues such as forest, biodiversity, 3R and education for sustainable development (ESD).” The world leaders renewed their awareness of the importance of actions that must be taken to address climate change and to realistically create a low carbon emitting society, to protect biodiversity, advance the 3R principle, and to create a Sound Material Cycle Society. Our society now strongly demands that corporations implement proactive actions towards tackling global environment issues. Pharmaceutical companies have also taken this message seriously and responded to the demand through continuous and voluntary actions that address the issues, as well as through active information disclosure to communicate to society the content of their actions and the achievements they have made.

In order to tackle such issues, the Japan Pharmaceutical Manufacturers Association (JPMA) established the Environment Committee in 1996. Since 2002, the Committee’s role has evolved to include occupational safety and health related matters, and thus the name was changed to the Environment & Safety Committee. We have developed our own voluntary action plans to implement measures for energy saving, for preventing global warming, for resource conservation, for waste management, and for controlling the air emissions of harmful pollutants. With regard to our voluntary action plan for resource conservation, waste management, and reduction of air emissions of harmful pollutants, we are very much on target. Concerning energy saving and measures against global warming, our target was set to “control total CO2 emissions output 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.” However the total CO2 emissions output from our member pharmaceutical manufacturers in FY 2007 was 2,360,000 tons of CO2 (t-CO2), exceeding the baseline figure by 610,000 t-CO2. Although it now appears very difficult to attain our target emissions, we will continue our efforts to fulfill the pharmaceutical industry’s social responsibilities. With regard to occupational safety and health, the results from our investigation showed that our member companies had a total number of 323 employees injured or killed in work-related incidents, with a frequency rate of 1.63. In businesses that employ 100 or more employees, the frequency rate for all manufacturing industries was 1.02 and that for the pharmaceutical manufacturing industry was 1.19. Thus, the frequency rate of work place accidents and incidents within our member companies is high. We plan to help our members improve the management of occupational safety and health for their employees by conducting a range of investigations and providing feedback on the results, and distributing a publication about occupational accident case studies and countermeasures. There are many other issues for us to address, including the adequate disposal of general waste from medical care sources, the environmental effects of pharmaceuticals and formulation of the “Corporate Activity Guidelines for Biodiversity”, among others. Solutions for some of these issues can only be accomplished through collaboration with other committees within JPMA and/or external bodies. We will continue to actively communicate with all parties concerned to develop a mutual understanding so that the situation can progress, even if it is only a little at a time.

As a means to enable a range of stakeholders to understand our activities detailed above, we annually prepare and publish this Environmental Report. The first issue of which was published in 1999. This issue, the “Environmental Report 2008” will be the tenth. Through this annual publication, we aim to better facilitate reciprocal communication with our stakeholders and enhance mutual understanding. Though this goal has yet to be achieved, we will continue our efforts to gain the trust for the 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 2008). This figure decreased by one company since FY 2007 (as of October 2007) as a result of corporate merger. The membership list can be found on page 22.
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 2007 (from April 2007 to March 2008). Information on each group’s activities up to as late as November 2008 may also be included.

Date of Publication
December 2008 (Planned Publication of Next Issue: December 2009)
This report is also available in our website.
(JPMA Website: "About Activities of JPMA; JPMA Publication; free Publications)
http://www.jpma.or.jp/english/Library/Environmental.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 2008). Committed to a patient-oriented approach, the 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 aims 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 prepares an annual plan to clarify the targets, and the status of progress is monitored annually.

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 Subcommittee”. 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 chairman, deputy chairperson, and a secretary, 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 a 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.

Please note that, in FY 2007, there were four Expert Subcommittees: the Environment Safety Management Expert Subcommittee, the Energy Saving & Global Warming Prevention Expert Subcommittee, the Resource Conservation & Waste Management Expert Subcommittee, and the Chemical Substance Management Expert Subcommittee. These groups were reorganized in April 2008 into the Environment Expert Subcommittee, the Occupational Safety & Health Expert Subcommittee, and the Global Warming Prevention Expert Subcommittee. All subcommittees have already begun their activities.
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 2007, 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.

Following are numerical targets set by the Environment & Safety Committee for each respective area. The action plans for after FY 2008 will be decided once FY 2008 follow-up actions with the member companies and analyses of the outcomes are complete.

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 Kaiseiren 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

A 20% reduction by FY 2007 of the quantity of air emissions of dichloromethane, 1,2-dichloroethane, and chloroform against the emissions in FY 2003

* A voluntary action plan to reduce the air emissions of harmful pollutants was developed in FY 1997. We have been working on this plan voluntarily. Similar to the measures for resource saving and waste management, we use a system in which, once an existing target is achieved, a new numerical target is set. FY 2007 is the final year of the Third Term Action Plan.

State of Progress of Action Plan

At the Environment & Safety Committee meeting, each Expert Subcommittee develops an annual and midterm action plan in their respective area and implements environmental actions, such as measures to prevent global warming, measures to reduce waste, measures to reduce air emissions of harmful pollutants, and develops strategies to enhance the occupational safety and health management system. Meanwhile, for matters related to reinforcing partnership with superior industrial bodies, national government, and society, the Planning Conference liaises with the respective Expert Subcommittee to facilitate information sharing and opinion exchange.

In terms of progress towards global warming prevention, the FY 2007 data shows a figure that falls short of the Action Plan Target by 34.9%. Therefore, we will be reviewing our actions to determine how to intensify our efforts for reaching the target. On the other hand, our measures to reduce waste have put us right on target for final disposal amount after waste processing, final disposal rate, and quantity of generated waste. This clearly demonstrates that the proactive efforts by our member companies have produced tangible outcomes, and we will continue our efforts towards reducing waste. Also, with regard to measures to reduce the air emissions of harmful pollutants, the numeric targets for FY 2007 have been achieved for dichloromethane, 1,2-dichloroethane, and chloroform. Based on these achievements, JPMA has deemed that our original objective was sufficiently achieved and has decided to conclude the part of our voluntary action plan concerning harmful air pollutants. In the future, our member companies will continue their respective efforts in reduction on a voluntary basis.

FY 2008 is the first year of the first pledged period under the Kyoto Protocol. JPMA will be working together with the Federation of Pharmaceutical Manufacturers’ Associations of Japan (FPMAJ) to come as close as possible to attaining the numerical targets. We will be asking each member company to take more proactive action, and we will actively assist in the efforts of each member company by facilitating the sharing of information related to energy saving technology and hosting technical training courses.
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<th>FY 2007 Business Plan</th>
<th>Activities and Achievement in FY 2007</th>
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<td>Environment Safety Management</td>
<td>• Disclose information related to environmental management&lt;br&gt;• Gather information related to the environment and occupational safety &amp; health&lt;br&gt;• Collaborate and communicate with parties within and outside of the industry&lt;br&gt;• Support member companies’ actions</td>
<td>• Published Environmental Report 2007&lt;br&gt;• Hosted technical training courses and gathered information on material flow cost accounting&lt;br&gt;• Information sharing and collaboration with FPMAJ and other committees&lt;br&gt;• Hosted seminars about pharmaceutical company’s CSR and measures to prevent global warming</td>
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<tr>
<td>Global Warming Prevention</td>
<td>Numerical targets&lt;br&gt;• 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.</td>
<td>Numerical targets&lt;br&gt;• Exceeded the target by 34.9% (610,000 tons)</td>
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<td><strong>Action plan</strong>&lt;br&gt;• Follow-up to the Keidanren Voluntary Action Plan on the Environment&lt;br&gt;• Host energy saving technical training course&lt;br&gt;• Publish energy saving case study dossier&lt;br&gt;• Investigate and review information about measures to prevent global warming</td>
<td><strong>Action plan</strong>&lt;br&gt;• Conducted a follow-up survey in collaboration with FPMAJ&lt;br&gt;• Hosted the 11th technical training course with about 100 attendees&lt;br&gt;• Published technical case study dossier and distributed to the member companies&lt;br&gt;• Facilitated information sharing, information gathering, and site visit events</td>
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<td>Resource Conservation &amp; Waste Management</td>
<td>Numerical targets&lt;br&gt;• Up to a 20% reduction in final disposal amount of waste to the landfill by FY 2010 (against the FY 1990 benchmark)&lt;br&gt;• Achieve 5% or less in final disposal rate by FY 2010&lt;br&gt;• A 10% reduction in waste generation quantity by FY 2010 against FY 1990 benchmark</td>
<td>Numerical targets&lt;br&gt;• Final output of waste reduced to 6.3% of FY 1990 benchmark&lt;br&gt;• Final Disposal Rate: 1.8%&lt;br&gt;• Waste generation quantity: 13% reduction against FY 1990 benchmark</td>
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<td><strong>Action plan</strong>&lt;br&gt;• Follow-up to the Keidanren Voluntary Action Plan on the Environment&lt;br&gt;• Review information about measures to reduce waste and about recycling&lt;br&gt;• Review information about general medical care waste</td>
<td><strong>Action plan</strong>&lt;br&gt;• Conducted a follow-up survey in collaboration with FPMAJ&lt;br&gt;• Collection of technical information and facilitation of site visits&lt;br&gt;• Conducted an investigation on MDI in collaboration with FPMAJ and reviewed future actions</td>
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<td>Chemical Substance Management</td>
<td>Numerical targets&lt;br&gt;• By FY 2007, a 20% reduction of the quantity of air emissions of dichloromethane, 1,2-dichloroethane, and chloroform against the emissions in FY 2003</td>
<td>Numerical targets&lt;br&gt;• Against FY 2003 benchmarks, dichloromethane, 1,2-dichloroethane, and chloroform have been reduced by 54%, 98% and 35%, respectively</td>
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<td><strong>Action plan</strong>&lt;br&gt;• Harmful Air Pollutants Voluntary Management Plan follow-up actions, PRTR, and VOC surveys&lt;br&gt;• Study on safety of chemical processes, investigation and review of the information</td>
<td><strong>Action plan</strong>&lt;br&gt;• Conducted the follow-up, PRTR and VOC investigations&lt;br&gt;• Conducted study about risk assessment of reaction processes and hosted lecture and site visit</td>
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<td>Occupational Safety &amp; Health</td>
<td><strong>Action plan</strong>&lt;br&gt;• Investigate status of introduced occupational safety and health management system and state of occupational accidents and incidents&lt;br&gt;• Review of measures for health management of employees&lt;br&gt;• Investigate the state of MR’s business vehicle accidents and countermeasures&lt;br&gt;• Host technical training course&lt;br&gt;• Review of technical information and regulations under occupational safety and health legislation</td>
<td><strong>Action plan</strong>&lt;br&gt;• Investigated the status of introduced occupational safety and health management system, and state of occupational accidents and incidents&lt;br&gt;• Investigated actions taken to manage employee’s health, such as periodical health screening and mental health measures&lt;br&gt;• Conducted survey on accidents involving business vehicles and case study of companies with lower vehicle accident rates&lt;br&gt;• Hosted lecture about occupational safety and health</td>
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Global Warming Prevention

The first year of the first pledged period under the Kyoto Protocol has arrived. The Japanese government made an amendment to the Kyoto Protocol Target Achievement Plan, and redefined voluntary action plans being implemented by industrial bodies to “play the central role in prevention of global warming”. There are now stronger calls for the industries to take more concrete actions in order to prevent global warming.

JPMA's Actions

JPMA places top priority on taking action to prevent global warming in its efforts to protect the environment. JPMA devised and published its first voluntary action plan in FY 1996, and JPMA members have since made continuous efforts in reducing CO2 emissions as they work towards a common target.

Target

To control total CO2 emissions output 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, the Environment & Safety Committee of the Japan Pharmaceutical Manufacturers Association has taken part in implementing the Japan Federation of Economic Organization (Keidanren) Voluntary Action Plan on the Environment by conducting follow-up actions. Its roles include the monitoring, reporting, and publishing of CO2 emissions levels and the efforts made by members in the prevention of global warming.

The JPMA Environment & Safety Committee also hosts an annual Energy Saving, Global Warming Prevention Technical Training Course to facilitate information sharing and opinion exchange between JPMA member companies and energy saving technology-related businesses, academic experts and government administration personnel, as a part of its efforts to lower society’s carbon dependency.

FY 2008 Follow-up to the Keidanren Voluntary Action Plan on the Environment

Every year, JPMA carries out follow-up actions to the Keidanren Voluntary Action Plan on the Environment in partnership with FPMAJ. In an effort to increase voluntary action plan participation, we requested that the Japan Generic Medicines Association (JGA) and the Japan Self-Medication Industry (JSMI) ask their members to take part in the follow-up surveys. We received responses from a total of 97 companies this year compared to the 66 companies the previous year. Validity of the data submitted from those companies was assessed and, 74 companies, an increase of 8 from FY 2007, were deemed fit to participate in the follow-up actions during the first pledged period under the Kyoto Protocol. The total number of companies involved in the follow-up actions for 2008 made up 6% of the 1,231 pharmaceutical manufacturers in Japan, an increase of one percentage point since the previous fiscal year. Please note that the 74 companies comprise 82.8% of total sales share in the Japanese pharmaceutical market.

Methodology:
A questionnaire was distributed. The answers were collated for each company for each fiscal year. Based on the formula specified in the Keidanren follow-up questionnaire form, the energy use and CO2 emissions levels were calculated.

Subjects of Survey:
Factories and laboratories were the subjects. Also, new in the FY 2008 survey, reviews and analyses of energy use and the CO2 emissions levels were performed for factories, laboratories, and businesses with both a factory and laboratory.

JPMA Voluntary Action Plan on the Environment: State of Progress

Of the companies that returned responses to the follow-up survey, a total of 2,360,000 tons of CO2 emissions was discharged in FY 2007. This figure equates to 134.9% of the FY 1990 benchmark output and represents an increase of about 610,000 tons. Despite the decline in CO2 emissions visible in FY 2005, with the worsening CO2 emissions parameters for electricity that accompanied operation stoppages at various atomic power plants in FY 2007, the decreasing trend turned into an increase of 41,000 tons compared to the previous year’s performance. (If CO2 emissions parameters for electricity had remained at FY 2006 levels, there would have been a decrease of 43,000 tons.)

The principle factors that led to reduction were: improved energy efficiency (42 companies) and energy source conversion (17 companies). We think this may be due to gradually manifesting effects of the energy saving and global warming prevention measures.

The pharmaceutical industry needs to implement strict control measures in research and development and 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 is ever increasing energy expenditure by air conditioned facilities, etc. Measures implemented in FY 2007 for energy saving and global warming prevention cost a total of ¥5,446,000,000 in capital and expenditures, almost three times more than the FY 2006 capital and expenditures. The principle measures that were implemented and their CO2 emissions reduction effects are summarized below.
Reduction in CO₂ emissions output through switching of the energy source was approximately 57,000 tons in FY 2007. This is a considerable reduction in comparison to the previous fiscal year (approx. 8,000 tons), which we believe is a result of our efforts in running technical training courses and providing our member companies with information about the effectiveness of reducing CO₂ emissions output.

### Future Actions

JPMA intends to work in partnership with FPMAJ to reach the Kyoto Protocol Target. Our actions will include the analysis of energy consumption for each respective business type, such as production, research, etc., the provision of technical information, and recruitment of member companies that have yet to join the Voluntary Action Plan. We will also work to reinforce stronger measures that must be taken to reduce CO₂ emission levels and promote energy saving measures at offices and homes, among others.

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### On the Japan Pharmaceutical Manufacturers Association’s Efforts for the Environment: Feedback from a Training Course Attendee

This year has brought about unprecedented turbulence caused by a financial crisis and the violent fluctuation of crude oil prices. I believe we have also entered a historically crucial period in terms of energy and the global environment, as seen in the rise of energy nationalism in energy and resource-rich countries, and as seen when the Hokkaido Toyako Summit was dubbed as the Environment Summit. Meanwhile, with globalization of the economy and environmental issues, Japanese companies must now be aware of international trends and movement. Of course there have been numerous issues that required international cooperation in the past, but many of these issues were specific to a certain region or limited to a particular industry. Only a limited number of considered common issues on a global scale. However, in terms of global warming, every country, company and individual around the world commits the same offense, and at this same time can become a victim, and therefore global warming is a truly unprecedented universal issue for all of us, as human kind.

Upon this backdrop, the respective industries in Japan follow the Kedaran Voluntary Action Plan on the Environment and daily strive to surpass the boundaries between individual companies and work towards attaining a common industrial target. I recently had the opportunity to participate in a two-day Energy Saving and Global Warming Prevention Technical Training Course run by the Japan Pharmaceutical Manufacturers Association on October 15th and 16th. I learned that the course was not only an occasion for the attending companies to learn about the technical specifics of environmental solutions, but it was also an excellent opportunity for the respective firm to review its own position.

At the training course, I was honored to talk about the significance of Heat Pump technology in environmental policies and its introduction by respective businesses. A Heat Pump was recommended in “Fukuda Vision” (June, 2008), a Japanese global warming prevention policy document published prior to the Summit, as an accessible and effective environmental solution within the home and business, because it offered alternative heating options without impacting the existing requirements. I heard that a pharmaceutical factory has and requires thermal demands in optimally air-conditioned clean rooms and during various processes such as drying, washing, and sterilization that take place on the manufacturing line. I understood, from reading global warming prevention case studies and listening to presentations about situations where improvements were made, that a lot of efforts were put into energy saving in those infrastructures that use steam. It is very important to continue such efforts, and I believe that being able to share case studies at such a course is an extremely effective means to work from the bottom up to increase the technical level of the industry.

Now, I believe the next step is to tackle a totally innovative approach, which will be a challenge. For example, heating water or dry materials using steam is an industrial approach steeped in common sense that it must be difficult to imagine a case where the means is not necessarily steam. The Heat Pump technology I introduced is an energy saving technology expected to be introduced into such processes as water heating, the hot water supply, air-conditioning, and drying. How, then, can such an innovative technology be introduced into the manufacturing line or air-conditioning facility? Taking this question into consideration is the first step of action. And solutions do not have to be limited to the introduction of machinery and a system. For example, any facility that consumes energy generates waste heat and left-over energy. Is there a way to reuse this energy? Is it possible to recycle thermal energy from the warm general waste water tank? Such a perspective fosters new actions for improvement, does it not?

I am very grateful that I could learn so many innovative efforts at the training course. The numerous solutions implemented by member companies help us build a valuable knowledge base impossible to acquire alone. As Dr. Komiyama, General Director of Tokyo University, once said, Japan is the most developed country in terms of the issues. What Japan has found a solution for will become an example to the rest of the world facing the same issue.

In conclusion, I wish sincerely that the environmental actions and efforts made by the Japan Pharmaceutical Manufacturers Association member companies will help substantially to mitigate global warming, first and foremost, along with other various environmental issues.
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 in FY 2010
3. Waste Generation; 10% reduction in FY 2010 compared to the FY 1990 performance

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 2007 was as low as 4,500 tons (6.3% against the amount in FY 1990), having already attained the target in FY 2005.

Final Disposal Rate (Figure 2)
The final disposal rate of wastes in FY 2007 was 1.8%. As was the case with the final disposal amount, this indicator has already reached the target in FY 2005.

Waste 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 2007 was 246,100 tons (13% reduction against the FY 1990 generation). The target has been achieved. We will continue to work on reducing waste generation.

* A questionnaire was sent to each of 70 JPMA member companies (at the time of survey). The responses received from 66 companies were collated, and the data were normalized with the survey cover rate based on the pharmaceutical sales. The survey rate in FY 2007 was 98.5%.
We continue to reduce waste generation to below the previous year’s amount every year.

Health, Labour and Welfare Minister Award for Achievement in 3R Promotion
Outstanding 3R Efforts at Ibaraki Plant, Dainippon Sumitomo Pharma Co., Ltd.

Ibaraki Plant started its operation as a pharmaceutical manufacturing plant in 1962 at its current location in Ibaraki City, a northern part of Osaka Prefecture. We have acquired ISO14001 certification in July, 2000 and established an environmental management system. Based on the system, we have implemented the following 3R efforts, and achieved reducing waste generation as well as “zero emission” in FY 2007.

1. Targets

1. Reduction of waste generation
   We continue to reduce waste generation to below the previous year’s amount every year.

2. Reduction of final disposal amount of wastes
   Stage 1: Reduction of the amount to 20% or less of the amount in FY 1990 (by FY 2006)
   Stage 2: Achievement of “Zero Emission” (by FY 2008)
   * Definition of “Zero Emission” of our plant: Final disposal amount of wastes is less than 1% of the waste generation.

2. Efforts

1. Reduce
   Our goal was to incorporate the ISO14001 target into internal improvement activities. Ideas were discussed and efforts were made especially during the group improvement activities to reduce product defect during the manufacturing process, reduce packaging material waste through more efficient operation and fine-tuning of the machinery, simplify packaging of raw materials and supplies among other measures, and reduce the amount of waste generated in the manufacturing process.

2. Reuse
   Using the internal improvement activities mentioned above, we have taken on board our staff’s ideas, mainly in the form of individual suggestions, for this phase of action. For example, the idea to reuse thick cardboard boxes and packing material for product distribution and transport from plant to distribution center and the idea that unnecessary stationary at each division be collected and brought to a single depot within the plant for reuse elsewhere were born from individual suggestions.

3. Recycle
   We have the designated staff who monitors the types and quantity of wastes generated at the plant and evaluates the recycling methodologies used by disposal contractors of respective waste processing, and continuously promotes recycling. We have developed recycling from paper wastes to metal, plastic and glass wastes step by step. Our final effort in this advanced recycling scheme was the processing of pharmaceutical waste (tablets, pharmaceutical powder, injectable pharmaceuticals, etc.). We negotiated with a waste treatment contractor and established a new way to recycle their incineration ashes, which can be melted down and processed into road sealing material.

3. Achievement

1. Reduction of waste generation
   Despite 26% increase in production volume, the amount of waste generated continued to decrease steadily every year. We have achieved a reduction of 274 tons (32%) compared to 2000.

2. Reduction of final disposal amount of wastes
   As a result of our progress in recycling, we have achieved the reduction goal of the final disposal amount by 112 tons (97%) compared to the amount in FY 2000. Our first stage target (20% or less compared to the FY 1990 level) was attained in FY 2006. The second stage target (achieving “Zero Emission”) was attained in FY 2007, a year earlier than planned.

We are sincerely thankful for and appreciate the support from JPMA and other organizations involved in the award. Winning this award will fuel our passion towards further environmental programs including 3R activities, the prevention of global warming and contribution to our community.

Figure 1 Yearly Changes in Waste Generation and Final Disposal Amount of Wastes
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.

JPMA began a voluntary PRTR survey in FY 1997 to monitor the quantity of emissions to the environment and/or transfers to the third parties of the designated chemical substances handled in the pharmaceutical industry, and the survey results have been disclosed. We also developed a voluntary action plan to reduce the air emissions of harmful atmospheric pollutants.

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, Labor and Welfare, in which JPMA is taking an active part. (See the article on page 18)

### JPMA’s Actions

JPMA began a voluntary PRTR survey in FY 1997 to monitor the quantity of emissions to the environment and/or transfers to the third parties of the designated chemical substances handled in the pharmaceutical industry, and the survey results have been disclosed. We also developed a voluntary action plan to reduce the air emissions of harmful atmospheric pollutants.

### Third Term Plan

To reduce the quantity of air emissions of dichloromethane, 1,2-dichloroethane and chloroform by 20% respectively by FY 2007 compared to the amounts in FY 2003.

JPMA has developed the emission reduction voluntary action plans (First Term: 1997 – 2000; Second Term: 2001 – 2003; and Third Term: 2003 – 2007) and implemented actions to reach the reduction targets. In 2007, the final fiscal year of the third term of the action plan, the air emission of dichloromethane was reduced by 54%, and that of 1,2-dichloroethane was reduced by 98%, respectively. Thus, these reduced emission amounts achieved the target (20% reduction) by large margins. With regard to chloroform, the reduction was a mere 1%, due to an accidental release happened at one of member companies in 2007. The company has promptly implemented the appropriate countermeasures. If this company’s emission amount is assumed to be the normal level, the reduction rate is estimated as 35%, which means the achievement of the target.

During the entire action period from the First to Third Term, air emissions of dichloromethane was reduced by 88%, 1,2-dichloroethane by 99%, and chloroform by 78% (estimated without the accidental release), respectively. Based on these achievements, JPMA has concluded that the original objectives of the programs was satisfactorily achieved, and has decided to complete the voluntary action plan. Even so, JPMA member companies will continue their respective efforts in the reduction on a voluntary basis.

### Voluntary Action Plan on Harmful Atmospheric Pollutants

#### Target

- **Third Term Plan**
  - To reduce the quantity of air emissions of dichloromethane, 1,2-dichloroethane and chloroform by 20% respectively by FY 2007 compared to the amounts in FY 2003.

#### Air emissions of dichloromethane

- **(Note)** Air emissions at the beginning of the Third Term (FY 2003) of the two figures is larger than that at the end of the Second Term (FY 2002). This discrepancy is due to an increased number of companies participating in the Third Term Action Plan to cover companies using the targeted substances in relatively smaller quantities.
PRTR Monitoring

Seventy JPMA member companies (as of July, 2008) handled 18,068 tons (a 4% reduction compared to the amount in FY 2006) of 354 class I substances in FY 2007, of which 701 tons (4% reduction) were released into the atmosphere, 21 tons (30% reduction) into public water, and nil into the soil.

In terms of the annual usages, toluene, dichloromethane, and acetone were the three biggest substances in this order, the same as the previous year. 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, chloroform and chloromethane in this order (see figure on right). Total of the air emissions of these five substances comprised 87% of the total air emissions.

JPMA member companies have continuously reduced the emissions of PRTR substances to the environment. Against the level in FY 2002, we have succeeded in 59% reduction of the emissions by FY 2007 (see figure on right).

VOC Monitoring

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 2010 by about 30% compared to the emissions in 2000. JPMA conducted an survey on the annual usage of VOCs among 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 2007, 42 substances were handled in quantities of one ton or more annually, and in total, 51,485 tons were handled. The four biggest substances were methanol, acetone, ethanol and ethyl acetate, listed in decreasing order. These four substances comprised 57% of the total annual usage. (See figure on the right)

Annual usage of volatile organic compounds (VOCs)
(The survey covered 239 facilities belonging to the JPMA member companies, their affiliated or related companies)
Occupational Safety & Health Management

For a business to carry out its operation smoothly, a workplace environment that is safe, healthy, and comfortable for its employees must be created and maintained.

In addition, as a part of risk management, it is now required of a business to implement proactive actions toward recognizing and addressing potential risks to occupational safety and health, before an incident occurs.

In response to this trend, JPMA believes it is important for its member companies to go beyond the existing narrow occupational safety and health framework applicable to only the limited area of the factory and laboratory. JPMA now believes in tackling a wider range of topics in relation to creating a workplace "where every employee can enjoy physical and mental health, and perform at his best in a safe working environment", and has expanded its actions to investigate member companies' efforts in occupational safety and health management.

Status of Occupational Safety & Health Management System Introduction

An occupational safety and health management system (OSHMS) was introduced by 48% (29 out of 60 companies) of our member companies. There has been no change in the rate of introduction compared to that of the previous year, though the number of business establishments that introduced a system has increased since last year (from 86 to 99). As for the type of system, a considerably large number of companies have introduced their own unique system. Though it is not prudent to perform a comparison with the results of the previous year, in the recent trend of progressive company amalgamation, it is clear that each member company was trying its best to establish a system that meets its own needs and situation.

Links between OSHMS Introduction and Occupational Accidents and Incidents

The number of the employees killed or injured in work-related accidents or incidents in FY 2007 and the cumulative working days lost due to these occupational incidents decreased compared to figures from the previous year and the year before. As a result, both frequency rate and severity rate also improved.

The Environment & Safety Committee began to study the link between OSHMS introduction and the frequency of occupational incidents. When the frequency of work-related accidents or incidents was compared to the status of OSHMS introduction at the same business, it was clear that those businesses that had introduced any type of management system had a lower frequency of work-related accidents or incidents. Thus, a management system was an effective means to prevent work-related accidents or incidents.

Incidentally, the Environment & Safety Committee has begun a new investigational project that is an occupational incident case study of JPMA member companies, and so far the committee has gathered about 100 cases. We intend to develop an occupational incident case study dossier based on the data collected in this project that will be made available to all member companies.
Health Checkup

Results from the routine health screening survey showed the mean clinical finding rate was 47.5%, and the rate of employees directed to seek further medical care was 26.3%, slight improvements compared to last year's findings.

<table>
<thead>
<tr>
<th>Previous (FY 2006)</th>
<th>No. of business establishments</th>
<th>Clinical finding rate*</th>
<th>Rate of being directed to seek further medical care*</th>
</tr>
</thead>
<tbody>
<tr>
<td>257</td>
<td>58</td>
<td>46.2%</td>
<td>27.7%</td>
</tr>
<tr>
<td>Latest (FY 2007)</td>
<td>266</td>
<td>47.5%</td>
<td>26.3%</td>
</tr>
</tbody>
</table>

*1: Clinical finding rate = Number of persons with clinical finding(s) / number of employees screened X100
*2: Rate of being directed to seek further medical care = Number of employees directed by a physician / number of employees screened X100

With regard to the unified management of health screening-related services, 55 out of the 58 companies that responded said they have a form of such system in place, indicating that unified management has become firmly established.

In terms of specific health screening for those with health insurance coverage, 32 companies out of the 54 that responded provide extended coverage to include a wider age range among other provisions that exceed the statute requirements.

Regarding the selection criteria for specific health service recipients and the method of operating such provisions, 26 out of the 56 companies responding to the question said, "Those employees who meet the national criteria will receive the provision", while the remainder, 20 companies answered, "Other". This seems to indicate some companies are still going through a state of trial and error.

Mental Health

The graph below shows the mean incidence of mental health disorders, mean rate of recovery and return to work, and mean rate of relapse after returning to work. Only 18 out of 60 companies responded to this category of questions. Laboratory employees had the highest incidence at slightly less than 2%, while the head office staff showed a high rate of recovery and return to work (over 50%). Meanwhile, the rate of relapse after returning to work was lowest (almost zero) in laboratories where the incidence was high.

| Incidence = Number of employees who developed a disorder / Total number of employees x 100
| Return rate = Number of employees returning to work / Number of employees who developed a disorder x 100
| Rate of relapse after return = Number of employees who experienced relapse / Number of employees who returned to work x 100

With regard to smoking, out of the 58 companies responding, 43 answered that smoking is "limited to a designated smoking area", while 9 companies said they have completely banned smoking.

With regard to each company's own measures to control metabolic syndrome, 4 out of the 11 companies responding to the question reported that they promote walking. There are also reports of active support and guidance.

<table>
<thead>
<tr>
<th>40 years or older</th>
<th>20 companies</th>
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<tbody>
<tr>
<td>35 years or older</td>
<td>19 companies</td>
</tr>
<tr>
<td>30 years or older</td>
<td>1 company</td>
</tr>
<tr>
<td>Everyone</td>
<td>10 companies</td>
</tr>
<tr>
<td>Other</td>
<td>6 companies</td>
</tr>
</tbody>
</table>

With regard to the availability of a mental health disorder support program, 66% of the respondents said an effective program, either internal or external, was available upon return to work. Program support for the time off work and after return to work was available at approximately 50% of work places. Only three companies used outside programs, and, overall, the majority of companies ran an internal program. In terms of the use of support programs, 98% answered that it was used effectively.
Work Life Balance

Recently the importance of Work Life Balance (harmonization of work and living) has been recognized. JPMA conducted a survey on member companies’ actions towards better Work Life Balance for the first time.

Since the amendment to Act on the Welfare of Employees Who Take Care of Children or Other Family Members Including Child Care and Family Care Leave in April 2005, each company has improved its internal scheme to accommodate employees needs for child care or family care leave. For instance, the rate of female staff returning to work after giving birth to a first child was 60% or higher in all 40 companies that responded to this query. This figure is much higher than the Cabinet Office target of 45% in 5 years.

As for the introduction of leave for voluntary commitment, about 60% of the 59 companies responding to this survey query had introduced or planned to introduce such a provision. However, up to only 2% of staff actually took leave under this provision, clearly indicating that currently the scheme is not effectively being used.

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 54 Companies (for over 50,000 vehicles) were then analyzed.

State of Accidents

The mean liable accident rate (number of accidents/total number of vehicles) was 19.3%, exceeding the previous year’s level of 18.0%. On the other hand, the rate of accidents resulting in injury or death was 2.1%, showing a declining trend over the past three consecutive years.

With regard to the causes of accidents, many companies stated an increasing number of young (especially newly graduated) medical representatives with little driving experience. Underdeveloped driving skills are thought to be the cause of accidents. Each company has strengthened its measures to address this issue, especially during new staff orientation training. In the past 3 years, the accident rate for new MRs has been declining.

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.
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. Due to their effectiveness, we believe it is important to continue these measures, and tailor them to the individual MR when appropriate.

More companies have also introduced a “corner sensor” as a tool to reduce accidents in car parks, with some visible effect.

Learning from Companies with a Low Vehicle Accident Rate

Among the companies responding to this survey, those with a low accident rate and low rate of accidents involving injury or death were identified and interviewed to learn further details of their actions. Following are some especially effective ideas learned through the interviews that are thought to be useful in future accident prevention at respective JPMA member companies.

- Training of New MRs
  - Preliminary instruction to prospective staff: 6 months before officially starting at the company, new hires will be asked their driving history, etc., and asked to improve driving skills prior to starting at the company.
  - Comprehensive training program, run annually over 30 years (costing approx. ¥10,000,000 every year)
    - First phase training: Training in actual vehicle, concentrating on reversing skills. Those who cannot drive smoothly will have to repeat training until improvement is demonstrated.
    - Second phase training: Rigorous driving technique training course (two days), as difficult as that for a professional driver, makes trainees understand the danger of cars and eliminates overconfidence in driving techniques.
  - Training after area assignment: Instructions suited for the particular area of assignment. Instructions in actual car at car park, where accidents tend to happen.
  - Sharing information among new MRs: MRs with less than one year of experience share information about their own accidents.

- Top down measures implemented by Management
  - Situation surrounding the accident is reviewed at a board meeting. Branch manager reports the cause, countermeasures, etc.
  - Branch manager himself conducts vehicle inspection.

- Measures for all MRs
  - Lecture by external speaker (insurance company): case studies of actual accidents, especially cases where settlement negotiations were lengthy.
  - Face to face appeal by head office staff in charge: Appeal for accident prevention at meeting, etc., where frontline MRs can be present.
  - Investigating details of accidents. Run a (3 months) campaign that focuses on the types of accidents that are on the increase (rear-end collision prevention, car park accident prevention, etc.), and follow up with an internal company newsletter.

- Physical measures
  - Intentional selection of a small vehicle model that provides high visibility.
  - A corner sensor, which is relatively cheap, introduced to all new vehicles last year.
  - Video recorder installed in cars driven by staff with a history of multiple accidents, so driving habits can be analyzed.

- Commendation
  - For all MRs: Book cards for the Gold license holder. Names in internal newsletter.
  - New MRs: Book cards for those employees without any accidents during the year. Names in internal newsletter.

- Other
  - In some cases, staff with a history of multiple accidents may have to pay 10 to 20% of repair costs out of their own pocket.
Harmonization with Society

Review of Business Vehicle Use
(Collaboration with the Environmental Bureau of the Tokyo Metropolitan Government)

JPMA works together with the Tokyo Metropolitan Government (TMG) in efforts to prevent global warming. TMG is pursuing their vision to adopt a new city model in which less energy consumption still enables comfortable urban living. One of the measures that must be taken to translate this vision into action is review of the use of business vehicles with the aim of reducing vehicle operation distance and fuel consumption. JPMA also took similar action in line with the above to help improve the environment.

The main purpose of JPMA’s action here is to identify issues necessary to adopt the new model city vision pursued by TMG. Through this activity already, we believe the pharmaceutical industry itself has had the chance to review possible change in its urban marketing style so we can make steps towards becoming an industry without excess dependency on motor vehicles.

Partnership with the Federation of Pharmaceutical Manufacturers’ Associations of Japan

The Federation of Pharmaceutical Manufacturers’ Associations of Japan (FPMAJ) established an environmental committee in October, 2007. Among the issues surrounding the entire pharmaceutical industry, whether it is the sector handling ethical 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. Global and social demands to tackle these issues are increasing year by year.

Activities to Prevent Global Warming

In conjunction with the Keidanren Voluntary Action Plan on the Environment (Global Warming Prevention Edition), FPMAJ and JPMA have taken part in the Follow-up to the Voluntary Action Plan (voluntary setting of numerical CO2 emission reduction target for the pharmaceutical industry and efforts to attain the target) since 1997. In FY 2006, 66 companies, mainly JPMA members and with some under JSMI, took part in the Voluntary Action Plan. Since FY 2007, wider participation was called for among JGIPMA member companies as well, and now 97 companies are a part of this effort.

Recently, progress is being made in international agreement on the measures against global warming, amendment to related statutes in Japan, social demands, and the streamlining of economic means (e.g. emissions trading system) as a means to complement efforts to reduce greenhouse gases. In this environment, global warming prevention measures are required immediate action in businesses. From now on, businesses need to be strongly aware of the importance of incorporating CO2 emissions reduction into their management performance.

○ FY 2007 Performance

FY 2007 performance was over the target level by approx. 610,000 tons (35%), making it very difficult to reach the reduction target.

Pharmaceutical Industry Target: To control total CO2 emissions from pharmaceutical manufacturers in FY 2010 (mean level for the period from FY 2008 to 2012) to below that of the baseline level in FY 1990.

○ Investigation and Review by the Japanese Government

A Cabinet decision was passed in FY 2007 for the Japanese Government to conduct investigation and review into the state of the industrial organization’s commitment to its voluntary action plan.

Partnership with the Federation of Pharmaceutical Manufacturers’ Associations of Japan

The FPMAJ Environmental Committee consists of members nominated by the Japan Pharmaceutical Manufacturers Association (JPMA), the Japan Generic Pharmaceutical Manufacturers Association (JGIPMA), and the Japan Self-Medication Industry (JSMI). At periodic committee meetings, comprehensive discussions across the industry take place over such issues shared by the entire pharmaceutical industry or over matters that require collaboration with other industrial bodies or over national policies.

Seishi Takenawa
Chairman, Environmental Committee, FPMAJ

The Follow-up Meeting created by the Ministry of Health, Labour and Welfare conducted their first investigation and review process at the end of January 2008. Despite findings that suggest the voluntary action plan target will be extremely difficult to reach, the Meeting still strongly requests that continuous efforts be made towards reaching the target.

○ Future Efforts

We will strengthen the framework of cooperation among JPMA, JGIPMA, and JSMI and step up our efforts in sharing information on energy saving technology and energy management techniques so that actions for attaining the voluntary action plan target can be further advanced.

Activities for Waste Reduction

In partnership with FPMAJ, JPMA has been involved in the Keidanren Voluntary Action Plan on the Environment (Sound Material Cycle Society Edition). Our actions are similar to those of the Global Warming Prevention Edition, to participate in the Follow-up to the Keidanren Voluntary Action Plan on the Environment (target setting for waste reduction and recycling). We have set three voluntary action plan targets, “waste generation”, “final disposal amount” and “final disposal rate”, and we will continue to facilitate sharing and better accessibility to information in order to collaborate with the government administration and waste contractors in efforts to reduce waste generation and for recycling and the proper processing of the waste.

In addition, with regard to the issue of general medical waste generated from the use of drugs, investigations and reviews are under way into our involvement in the provision of information as drug manufacturers, as a part of efforts made towards the proper processing of medical waste generated at homes through home-based care or outpatient treatment.
Environmental Activities of the Japan Generic Pharmaceutical Manufacturers Association

The Japan Generic Pharmaceutical Manufacturers Association (JGPMA) established its own environment committee in December 2007, following the same move made by the Federation of Pharmaceutical Manufacturers' Associations of Japan (FPMAJ).

Since establishment of the Environmental Committee, 20 (now 21) out of 41 (now 44) JGPMA member companies have registered to become Environmental Committee members. Prior to establishment of the JGPMA Environment Committee, two personnel from JGPMA member companies had been sent to the FPMAJ Environmental Committee in an effort to understand the actions for energy saving and the prevention of global warming taken by the FPMAJ Environmental Committee and Japan Pharmaceutical Manufacturers Association (JPMA), in addition to the environment in which pharmaceutical industry organizations operate in, and the current state of society. After this period of preparation, the inaugural Environmental Committee meeting was held on February 5, 2008. Following is a summary of the JGPMA Environmental Committee activities for the year ending March 31, 2008.

**JGPMA Inaugural Environment Committee Meeting**

Our first meeting commenced with an inaugural speech by the administrative director of JGPMA, Kenich Nagano, who briefly discussed the purpose for establishing the Environmental Committee. This was followed by election of the chairman and deputy chairman, and other organizational business was handled. The following matters were also discussed.

- **Discussions on policies for next fiscal year (working draft)**
- **Monitoring of state of energy use at JGPMA member companies**
- **Motivational and/or educational actions (seminar, self-motivated study, peer motivation, etc.)**

**Request to participate at energy saving seminar**

A request was made for proactive participation at the FPMAJ energy saving seminar, etc.

**Report on FPMAJ Environmental Committee**

There was a report on the content of FPMAJ Environmental Committee meetings (three meetings, including the preparatory meeting) and distribution of resource documents in order to facilitate better understanding of the current state of the pharmaceutical industry and society.

- **Survey to indentify the number of factories designated for energy management.**

A questionnaire was distributed to identify which factories belonging to JGPMA were designated for energy management.

- **Participation at “the first energy saving and global warming prevention seminar” hosted by FPMAJ**

In response to the Environmental Committee’s request, approximately 30 personnel members attended the seminar.

In partnership with FPMAJ, JSPA, and JSMS, we hope to accelerate our action in the next fiscal year.

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**Efforts for Assessment of Environmental Risks of Pharmaceuticals**

Recent years have seen a rising interest in the pharmaceutical ingredients detected in natural environment including rivers and public water supply. Japan Pharmaceutical Manufacturers Association has taken actions since 2003 to address this issue and to fulfill our part of the pharmaceutical industry’s social responsibilities. Since then, the Environmental Impact Assessment Taskforce within the Basic Research Subcommittee of 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.

In European countries and the US, the guidelines for the assessment of pharmaceuticals’ impacts on the environment are already in place. When they are applied for approval of a new pharmaceutical in these countries, the environmental impact assessment must be carried out and the results must be submitted, alongside data about the pharmaceutical’s efficacy and safety. It is expected that Japan will develop the similar guidelines. The research team at the Ministry of Health, Labour and Welfare, called the “Pharmaceutical’s Environmental Impact Assessment Research Team”, has been studying methodologies to assess pharmaceutical product impact on the environment. A report was submitted of the research team’s outcomes in the three years leading up to the end of March 2008. Although specific timelines are not yet clear, it is likely that a draft of guidelines based on this report will become available in due course within the next several years.

The Environmental Impact Assessment Taskforce will take part in the activities of the MHLW research team in developing the above-mentioned draft guideline. As a preparatory step to submitting public comments, the Taskforce is also taking various proactive actions to promote information sharing and active discussion. Currently, we have been attending various academic society conferences, hosting seminars with expert speakers from Japan and from overseas, submitting articles to scholarly publications, formed a partnership with the Pharmaceutical Research and Manufacturers of America (PhRMA) Task Force on Pharmaceuticals in the Environment, and others.

Current State of Emissions Trading and Enterprise Application

Japan and Overseas Movement toward a Low Carbon Society

The amount of greenhouse gases being emitted globally is now about twice that of the gases being absorbed. There have been various actions taken in Japan and overseas towards forming a Low Carbon Society. The Hokkaido Toyako Summit was the venue where a long-term vision toward halving CO₂ emissions was shared. The principle countries in Europe and in North America have announced long-term targets that exceed the ones shared at the Summit. Also, the new trend is to view the effort itself for reducing CO₂ emissions as a criterion for government, new political policy or investment and loan.

In Japan, the “Fukuda Vision” speech on June 9, 2008 illustrated the “Action Plan for creating a Low Carbon Society” (Tei-tanso Shakai Zukuri).

Kyoto Protocol Target Achievement Plan and Application of Emissions Trading

The FY 2007 report illustrated Japan’s total CO₂ emissions falling to make the Kyoto Protocol Target by a considerably large margin of approximately 14.7%. Reducing CO₂ emissions output is now an urgent and grave issue. The Japanese government amended its Kyoto Protocol Target Achievement Plan in March this year to ensure the target can still be achieved. The amendment was made to push and strengthen voluntary action plans promoted by the Japan Federation of Economic Organization (hereafter referred to as Keidanren) and, in addition to the strict evaluation and review provisions already in place, required industries to set the details and expected outcomes of CO₂ emissions reduction actions in a quantitative and concrete manner. The Keidanren itself committed to saying attainment of the voluntary action plan target is their “Pledge to society” in a statement published in June.

Under the circumstances described above, each business is attempting to find its own way by reviewing the options. For example, possible options could include various combinations of means to reduce CO₂ emissions such as the purchase of carbon emission credits by weighing up the amount of reduction against the cost for reduction. Though, it would be best if the reduction target was achieved through an investment in energy-saving measures, by switching energy sources, or other autonomic means, if attaining the reduction target is just plain impossible or markedly costly, one of the options warrant for review would be the purchasing of carbon emission credits. Already, the major emitters such as electric power supply companies and the steel industries have long been working to obtain carbon emission credits. Other active moves have included several businesses and organizations that obtain carbon emission credits as actions to fulfill CSRs.

(A number of options for reducing CO₂ emissions for corporations)

Emissions Trading through Trust Management Service

Those who have attempted to acquire carbon emission credits in Japan have encountered various issues such as “Not sure where to buy credits”, “Only a few are willing to sell small units”, and “Carbon emission credits are a new commodity and their management is hard to understand.” Our company had a similar experience in March of last year when attempting to acquire 10,000 tons worth of carbon emission credit (Kyoto credit) while being carbon neutral. We have since launched a new service in which our company manages the carbon emission credits as a fiduciary, and makes such credits available in small units that can be purchased. This activity has become very popular among our customers. When selecting which carbon emission credits to buy, it is important to consider “whether the required quantity is available from a reliable source”, “whether the simultaneous receipt and payment of carbon emission credits is possible” and other factors. The spot transaction of carbon emission credits and acquisition of a trust beneficiary are superior options in terms of these accounts.

A trust management service for emissions trading is already in use by many corporations for the following purposes: to attain the voluntary action plan target, in the offer of an emissions offset product or service, as a part of their CSR strategy, in addressing matters related to “the new CO₂ emissions based criterion”, and so forth. Our company intends to help our customers explore their environmental solutions through our trust management service.
Environment & Safety Committee facilitates JPMA members' information sharing through its seminars and technical training courses, periodical publication of “Environment News”, and distribution of the information, summarized into a booklet, etc., collected from the member companies through our surveys so that better awareness and efficient solution to the issues can be achieved.

### Survey and Report

The Environment & 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 purpose of streamlining implementation of the necessary actions. Respective Expert Subcommittee conducts surveys by administering questionnaires, etc., to monitor company progress in reaching the target and to identify issues and tasks. The Expert Subcommittee then prepares report(s) on the findings as a form of feedback to member companies.

### Publication of the “Environment News”

The Environment & Safety Committee issues the “Environment News”, a publication that includes summaries of Environment and/or Occupational Safety and Health related Seminars and Technical Training Courses for easy access by member companies. Such information is uploaded on PRAIENET, the intranet shared by the Federation of Pharmaceutical Manufacturers’ Associations of Japan, the Osaka Pharmaceutical Association, and the Tokyo Pharmaceutical Association so that the information is widely distributed within the pharmaceutical industry.

### Publication of Achievement Report

The Environment & Safety Committee organizes the information obtained through various research conducted by each Expert Subcommittee, or at lectures, seminars, and Technical Training Courses and lectures, and collates the annual data into a CD-ROM for distribution to member companies. This arrangement enables member companies to access a wide range of information about seminars, technical training courses, or other events that its personnel could not attend. This is a means for respective member companies to learn information related to actions taken by the Environment & Safety Committee and for use in its own actions. Please note that this Achievement Report is created under the cooperation and understanding of the many lecturers and speakers of the seminars, Technical Training Courses, etc.

### Hosting of Environment Safety Seminars and Technical Training Courses

The Environment & Safety Committee runs seminars for the administration and management staff involved in running Environment and Occupational Safety and Health related operations. These seminars have outside 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, Technical Training Courses are designed to promote our actions and to facilitate the exchange and sharing of technological expertise and management know-how related to environmental or occupational safety and health issues, as well as to provide opportunities to learn through case studies about actions implemented by respective member companies.

### Seminars, Lectures, and Technical Training Courses Held between December 2007 and November 2008

<table>
<thead>
<tr>
<th>The 14th Environment &amp; Safety Seminar (December 2007)</th>
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</thead>
<tbody>
<tr>
<td><strong>Actions to Promote Material Flow Cost Accounting (MFCA)</strong></td>
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</tbody>
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| Hideki Kimizuka  
Environmental Industries Office, Industrial Science and Technology Policy and Environment Bureau, METI | |
| **Significance and Vision of MFCA** | MFCA was established as an environmental accounting methodology with capabilities to support decision making for actions of product and environmental consideration, as well as to assist in the actions themselves. Commentary on effective use of MFCA, MFCA’s cost improvement potentials, issues surrounding continuous use of MFCA, etc. |
| Katsuhiko Kunibe  
Professor, School of Business Administration, Kobe University Graduate School | |
| **Development of Sustainable Management**  
A case of MFCA in enterprise | Beyond the limitations of profit driven or environment priority management, MFCA is a management tool that can help protect the environment as well as corporate profitability. Commentary on MFCA use in reduction of environmental load and cost, analysis of positive-negative product cost, etc. |
| Michiyasu Nakajima  
Professor, Department of Commerce, Kanazawa University | |
| **Pharmaceutical Manufacturer’s Environmental Strategy**  
Road to successful CSR actions for sustainability | Commentary on projected corporate decline of environmental sustainability and changing stakeholder image. Analysis of CSR perspective in the direction of overseas environmental policy discussion, and the issues and tasks that face Japan. Explanation of what is demanded of front line corporations in the future. |
| Peter D. Pedersen  
Si-Quarte Inc. (Tokyo Waterfront) | |
### The 32nd Environment & Safety Lectures (April 2008)

**Measures to Prevent Global Warming**
Yoshitomo Iwama
Industrial Head Office III, Japan Federation of Economic Organization (Kadakiren)

Analysis of current global state of CO2 emissions. Detailed commentary of the Sectoral Approach suggested by Japan as a framework for fair division of burdens among the major emitters. Also, commentary on progress of the voluntary action plan and its international significance.

### Technical Training Course (June 2008)

**Requirements of Safety Management for Pharmaceutical Manufacturers**
Fujio Hayama
Division for Environment, Health and Safety, Tokyo University

The pharmaceutical industry attracts sizable expectation of the drugs it makes, but at the same time is prone to blame and criticism once an accident or incident occurs. Commentary on safety management at the level of the pharmaceutical manufacturer and how to reduce risks while responding to society's expectations.

**Managing Energy, Powering Performance**
Mark Cunningham-Hill
Global Operations, GlaxoSmithKline

The strength in an individual who fights against stress is called "resilience". Resilience differs from person to person. Commentary on the program used at GlaxoSmithKline to increase employees' resilience and program implementation.

### The 12th Energy Saving/Global Warming Prevention Technical Training Course (October 2008)

**Heat Pump Technology as a Global Warming Prevention Tool in the Industrial Sector**
Takashi Yalabe
The Foundation of Heat Pump, Heat-accumulation Center

Now heat pump technology is in high demand as energy saving technology for the prevention of global warming. Looking into cases where the heat pump technology was applied to industrial thermal management, with some commentary on policy-related significance of the technology.

**Current State of Emissions Trading and Enterprise Application**
Sachiko Aki
Mitsubishi UFJ Trust Banking Corporation

Although it would be best if the greenhouse gas reduction targets could be achieved through our own efforts alone, emissions trading can also be considered as an option. Commentary on the current state of emissions trading, recent example of enterprise application, and the domestic and global environment that surrounds emissions credits.

**CO2 Emission Reduction by Energy Source Switch using Available Subsidy**
Masanobu Kubota
Kyowa Hakko Kirin Co., Ltd.

In FY 2005, Kyowa Hakko Kirin successfully switched boiler fuel from heavy fuel oil to city gas using funding from the Japan Gas Association. The case study was presented.

**Animal Laboratory Ventilation Monitoring and Introduction of Ventilation Adjustment Facility Leading to Improvement**
Tsuguo Gotoda
Otsuka Pharmaceutical Co., Ltd.

At Otsuka Pharmaceutical, energy saving work was done on the animal room so that ventilation could be monitored and adjusted, or reduced in the case of no animals. This new ventilation system has been investigated for three years since 2002. The case study was presented.

**Universal Energy Saving Efforts**
Kyoichi Hasegawa
Takao Pharmaceutical Co., Ltd.

The "Energy Saving Office", consisting of personnel from the factory's facility division and environment division, took the initiative to support universal participation in energy saving actions at each workplace. This initiative achieved a 0.5% reduction in the factory's annual CO2 emissions. The case study.

**Future Direction of Energy Saving Policies Including Amendment to The Act on the Rational Use of Energy**
Mitsunori Fukuda
Agency for Natural Resources and Energy, METI

Review of background of the amendment to the Act on the Rational Use of Energy passed at the 2008 ordinary session of the Diet. Commentary on future direction of the Ministry of Economy, Trade and Industry policies regarding energy regulation per business, per sector benchmark, etc.

**Ministry of Environment's Actions against Global Warming**
Koichi Adachi
Global Environment Bureau, Ministry of Environment

Commentary on the current state of global warming and future ramifications, domestic actions, an overview of revised Kyoto Protocol Target Achievement Plan, measures in the industrial sector, a global warming prevention case study, applied technology, effective use of the Kyoto Mechanism, etc.

**Efforts on Global Warming Prevention by Pharmaceutical Manufacturers; Implementation of the Follow-up to the Voluntary Action Plan on the Environment**
Yoshinori Kujira
Counselor's Office (Labor Policy), Ministry of Health, Labour and Welfare


### The 15th Environment & Safety Seminar (November 2008)

**CSR Expected of Businesses and the Pharmaceutical Industry**
Mizue Unno
So-Tech Consulting Inc.

Describe corporate social responsibilities (CSR) in a global perspective. CSR at businesses defined. CSR cases at EU pharmaceutical manufacturers. Issues with CSR in Japan and what is required of Japanese pharmaceutical manufacturers.

**What are Sustainable Enterprise Activities? Direction in post-Kyoto Protocol**
Itaru Yasui
Center for Research and Development Strategy, Japan Science and Technology Agency

Scientific uncertainty regarding global warming was clarified. Issues were then identified in a wider perspective in terms of future population growth, global and society's sustainable potential, risk management of various dimensions, development of eco products and technology. Commentary on direction of long-term global warming prevention.

### Study Group Activities

JPMA organizes Study Groups in the Expert Subcommittees, to contribute to specific areas that require technical expertise by participating any members from JPMA companies. Currently three Study Groups, the "Kyoto Protocol Comprehensive Action Study Group", "3R Study Group", and "Process Safety Study Group" have been established.
Study Group Activities in FY 2007

Kyoto Protocol Comprehensive Action Study Group

A Cabinet Decision to “Amend the Kyoto Protocol Target Achievement Plan” was adopted on March 28, 2008. The Japanese government announced its intention to commit itself fully to attainment of the target in order to help control global warming. Each respective industry also developed a voluntary action plan as part of continuing efforts to achieve the Kyoto Protocol Target. Activities at the JPMA Kyoto Protocol Comprehensive Action Study Group include studies on realistic actions and measures that can be taken to prevent global warming, and presentation of the findings while at the same time promoting information exchange.

Our specific actions include: the “introduction of laboratory-related energy saving; a case study”, the “group study of the revised Act on the Rational Use of Energy in force in FY 2009”, the “safety study on laboratory-related (animal housing facility) energy saving measures; case introduced by an external speaker” and the “site observation trip to Hamaoka Nuclear Power Station, Chubu Electric Power, Co.”.

We will continue our study of actions and measures to prevent global warming, and provide our members with effective information.

Site observation trip to Hamaoka Nuclear Power Station, Chubu Electric Power, Co.

J'ai terminé mon examen.

3R Study Group

The 3R Study Group is the successor to the “Zero Emission Study Group” (July 2006 to May 2007). Since its establishment in July 2006, seven study group sessions were held. After all of the topics initially planned were successfully covered in the sessions, this group has just completed its activities.

The potential of selling “valuable” waste became a focus of the study group. Due to the rapid rise of the cost of various resources such as petroleum and metal, some of previously disposed wastes can now be traded as a commodity.

The study group looked into advanced companies that had actively worked on this issue, and interviewed the related waste treatment companies. The study showed that in terms of selling “valuable” wastes we have potentials not only with the waste generated at plants, etc., but also with office waste.

This knowledge has already been applied by some of study group member companies, and some of the wastes used to be treated by additional cost now generates monetary value, leading to cost cutting and reduced waste generation.

Process Safety Study Group

The “Chemical Process Safety Assessment Study Group” was established in April 2007. The group changed its name to the “Process Safety Study Group” in April 2008, with approximately 20 members from 14 companies, to increase knowledge of and improve their level of technical expertise in areas such as safety assessment for manufacturing active pharmaceutical ingredients (API), the manufacturing process development, and the review of feasibility study for the manufacturing. In the last 12 months, we had 12 valuable lectures in cooperation with various professionals, including the assessment of thermal risks of chemical substances, risk assessment of the reactive process, runaway reaction assessment, the fundamentals of static charge control, case studies about accidents at chemical laboratories and factories, and a case study of safety assessment. We also had study trips to the Kanagawa Industrial Technology Center and the Sumika Chemical Analysis Service to learn about measurement equipments, and for the opportunity it gave us to exchange information about the study group member companies’ own process safety assessment system implementation and handling of issues when production expansion is planned, etc.

Study group member companies surveyed books and references useful in process safety assessment. The compiled results, “Study on process safety assessment resources”, has been distributed to the JPMA member companies.

We will continue our efforts to offer or facilitate the exchange of practically valuable information.

JPMA Member Companies (listed in alphabetical order): 69 Companies as of October 2008

ABBOTT JAPAN CO., LTD.
AJINOMOTO CO., INC.
ASAHI KASEI PHARMA CORPORATION
ASKA PHARMACEUTICAL CO., LTD.
ASTELLAS PHARMA INC.
AsahiGensei K.K.
BANYU PHARMACEUTICAL CO., LTD.
BAXTER LTD.
BAYER YAKUHIN LTD.
BRISTOL-MYERS K.K.
THE CHEMOTHERAPEUTIC RESEARCH INSTITUTE
CHUGA PHARMACEUTICAL CO., LTD.
Dainippon Sumitomo Pharma Co., Ltd.
DAIICHI SANKYO CO., LTD
DAIICHI SANKYO CO., LTD
EISAI CO., LTD.
ELU LILLY JAPAN K K
FUJIFILM PHARMACEUTICAL CORP.
FUJISAWA PHARMACEUTICAL INDUSTRIES, LTD.
GSK UK K.K.
HANAVAXI K.K.
HIMATSU PHARMACEUTICAL CO., INC.
JANSSEN PHARMACEUTICAL K.K.
JAPAN TOBACCO INC.
KAMEN PHARMACEUTICAL CO., LTD.
KISSEI PHARMACEUTICAL CO., LTD.
KOWA Company Ltd.
KÖNIGE PHARMA LTD.
Kyorin Co., Ltd.
KYORIN PHARMACEUTICAL CO., LTD.
KYOTO PHARMACEUTICAL INDUSTRIES, LTD.
KYUDA HAKO KINR CO., LTD.
MARUMI PHARMACEUTICAL CO., LTD.
MELU SEKA KISHI LTD.
MINOHEN PHARMACEUTICAL CO., LTD.
MITSUBISHI TANABE PHARMA CORPORATION
MOCHIDA PHARMACEUTICAL CO., LTD.
MYLAN SEIYAKU LTD.
NIHON PHARMACEUTICAL CO., LTD
NIPOPO BOERINGER INGELHEIM CO., LTD.
NIPOPO CHEMPAR CO., LTD.
NIPOPO KAYAKU CO., LTD.
NIPOPO SHINYAKU CO., LTD.
NIPOPO ZOKI PHARMACEUTICAL CO., LTD.
NOVARTIS PHARMA K.K.
NOVO NORDISK PHARMA LTD.
ONO PHARMACEUTICAL CO., LTD.
OTSUKA PHARMACEUTICAL Co., Ltd.
Pfizer K.K.
POLA PHARMA INC.
SAN-EI SEIYAKU K.K.
SANTEN PHARMACEUTICAL CO., LTD.
SAUNA KAGAKU KENKYUSHO CO., LTD.
SCHERING-PLOUGH K.K.
SEIKAGAKU CORPORATION
SENJU PHARMACEUTICAL CO., LTD.
SHIONOGI & CO., LTD.
TAKEDA PHARMACEUTICAL COMPANY LTD
TEIJIN PHARMA Limited
TEIKOKU SEIYAKU CO., LTD.
TEIJIN PHARMA Limited
TOA EYO LTD.
TORI PHARMACEUTICAL CO., LTD.
TOYAMA CHEMICAL CO., LTD.
TSUMURA & CO.
UCB JAPAN CO., LTD.
WAKAMOTO PHARMACEUTICAL CO., LTD.
WYETH K.K.
ZEREA PHARMACEUTICAL CO., LTD.