Energy Saving / Prevention of Global Warming

As the effects of global warming are becoming more conspicuous around the world, the demand for reducing greenhouse gases is bigger than ever. JPMA has identified prevention of global warming as the most important environmental issue, and we have formulated and publicized JPMA Voluntary Action Guideline on the Environment. All member companies have owned and endeavored a target for reduced greenhouse gases in 1999 towards.

At JPMA

1. We participate in the follow up of the Nippon Keidanren Voluntary Action Plan on the Environment and annually investigate, report, and publicize JPMA' (member companies as a whole) level of CO_2 emission and efforts toward global warming prevention.
2. We host annual energy saving & global warming prevention technical training courses and provide the opportunity for member companies to exchange information with each other or with manufacturers of energy saving, global warming prevention technology, academic experts and governmental staff. In FY 2006 the course was held in October under the theme of "Pharmaceutical corporations responsibilities for prevention of global warming".
3. We are conducting multifaceted inquiries about a general action plan for the Kyoto Protocol through the activities of our study group.

Target

To control the level of CO_2 emission from the pharmaceutical industry at a level below that in FY 1990 by FY 2010

In FY 2005, the gross CO_2 emissions from the JPMA member companies under the voluntary environmental action plan made up 2.396 million tons. The level of emissions gradually increased between FY 2001 and FY 2004, and then showed a trend in reduction this FY. The increase since FY 1990 is 604 thousand tons. The effects from increased production since 1990 was an increase estimated at about 1.2 million tons, half of which to be reduced due to emission reduction measures implemented by each corporation.

The efforts made by member companies include switching the energy source from fuel oil or LPG to city gas, revisions to protocols for facilities / machinery operation and conditions control, installation of a co-generation system, installation of high efficiency machinery and inverters, and revision of the operational process. But despite all these changes, the outcome is still not enough.

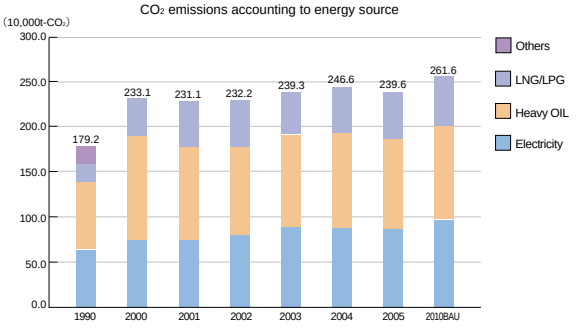
The projected level of CO_2 emission until FY 2010, as estimated from the economic growth rate, is 2.60 million tons. In order to achieve our target, about 800 thousand tons has to be cut. This quantity is approximately 1/3 that achieved in FY 2005, which when taken into consideration makes achieving the target seem extremely difficult. Only 15 JPMA member companies believe achieving the FY 2010 target is possible.

We also investigate efforts in reducing the CO_2 emissions from office and business vehicles.
The total quantity of CO_2 emission from offices is 216 thousand tons, 9.0% of the total emission from factories and laboratories. The measures taken include ensuring OA and lighting facilities are turned off when not in use, a revision of the air-conditioned zoning, insulating window panes against solar heat, setting temperature standards for air conditioning, and promoting Cool-Biz among desk workers. The total quantity of CO_2 emission from business vehicles is 155 thousand tons, 6.5% of the total emission from factories and laboratories. The switch to low emission vehicles is under way, and already about three-tenths (12 thousand vehicles) of the total 40 thousand vehicles that we got response are a low emission specifications.

As quantitative evaluation and revision of the Kyoto Protocol target attainment plan in FY 2007 are drawing near, the demand for accomplishing a reduction plan is higher than ever. Although the scale of CO_2 emission is small compared to the whole Nippon Keidanren, the pharmaceutical industry has to fulfill its social responsibility in the prevention of global warming.

In order to assist each member company in achieving the target, JPMA conducts investigations and provides information on trends in energy saving policies and global warming countermeasures, the latest information on global warming prevention technology, and the effectiveness and risks of the Kyoto Mechanism by hosting energy saving / global warming prevention technical training courses and study groups on integrated measures for the Kyoto Protocol and the distribution of energy saving / global warming prevention case studies. We continue our efforts, including actions by JPMA as a whole, with the conviction that "We will surely achieve the FY 2010 target".

CO_2 emissions accounting to energy source



Below are calculations based on electricity and fuel usage data reported by 62 JPMA member companies.

TOPICS

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Tenth energy saving / global warming prevention technical training course Case study presentation

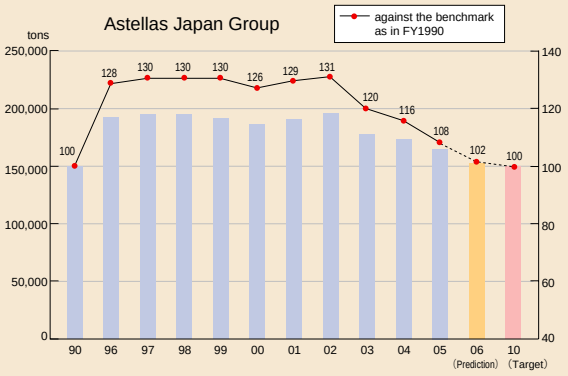
Environmental Action Plan by the Astellas Group –Prevention of Global Warming –

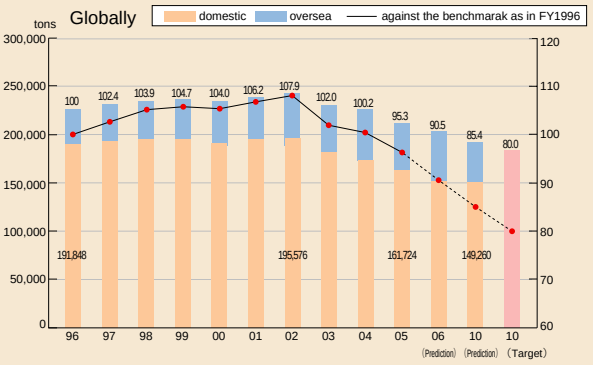
1.Environmental Action Plan

The Environmental Action Plan for FY 2006 sets global base target figures for the prevention of global warming. Also included are action plans that set concrete target figures and a completion period for chemical substance, energy saving, and waste management, and information disclosure.

2.Prevention of Global Warming

1 Level of Carbon dioxide emission by Astellas





The level of carbon dioxide emission by the Astellas Japan Group increased by 8% as of FY 2005 from FY 1990 (target: ±0%). Globally, this was a 5% reduction as of FY 1996 (target: -20%). Classified according to each department's emission in Japan, in FY 1990, 80% of emission was from the Production department, but this figure decreased to 60% by FY 2005. On the other hand, emission from the Research department has largely increased. As an energy source type, fuel oil dominated at over 40% in FY 1990, but use was decreased to just under 20% in FY 2005.

2 Price of carbon dioxide

When looking at the former Fujisawa Pharmaceuticals as an example, the calculation from the investment in facilities and the amount of reduction yielded an 87,600 yen cost reduction per one ton. One way to judge whether this cost is meaningful is to calculate the impact of environmental conservation actions into a monetary figure, so called the "deemed effects" proposition. This has yet to be completed, and Astellas thinks it can do better. Another way to estimate the impact is in terms of economic effects. Economic effect is obtained from the economic loss, social loss, and social benefit using the formula below.

Economic effect = economic loss x social loss + social benefit

The "economic loss" by carbon dioxide emission is gained from the proposed environmental tax (2,000 yen/ton) and emission trading (5,000 yen/ton). The "social loss" can be a parameter with three categories, large (2.0), medium (1.5), and small (1.0) (small (1.0) for global warming prevention). Social benefit is at the level of gaining social trust, and therefore this item does not apply to carbon dioxide emission. A period of seven years is used to accommodate the depreciation of facility investment. This methodology is based on many assumptions for the handling of each item. Consequently figures vary largely, but they are still thought to be useful factors for judging facility investment decisions. The "willingness of the leaders" still dictates investment decisions made at the facilities for CO_2 emission reduction. However, this "counting birds you have yet to catch" kind of method and CSR business principles are still a means for us, the CSR staff and the administration, to coerce the top into making facility investment decisions, which, we believe, is an important role of ours.