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**Tough action is needed  
to achieve  
A Non-Toxic Environment**

- a brief summary of the basis of the second in-depth  
evaluation of the Environmental Quality Objective  
A Non-Toxic Environment

Swedish Chemicals Agency

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## **About the second in-depth-evaluation of the environmental quality objective A Non-Toxic Environment 2007**

The Swedish Chemicals Agency is responsible for the Environmental Quality Objective 'A Non-Toxic Environment'. In 2007, the Agency submitted a report to the Environmental Objectives Council as a basis for the second in-depth evaluation of A Non-Toxic Environment in the spring of 2008. The Government intends to submit an environmental bill to the Riksdag, the Swedish parliament, in 2009. The information provided by the Agency to the Government contains assessments of target achievement, proposed action and revised interim targets, as well as macroeconomic impact assessments.

### ***A Non-Toxic Environment – one of 16 environmental quality objectives***

In 1999, the Riksdag adopted 15 national environmental quality objectives, to be attained by the year 2020 (2050 in the case of the objective 'Reduced Climate Impact'). In 2005, a 16th objective was added. The environmental quality objectives create a transparent and stable framework for environmental programmes and initiatives, and serve to guide such efforts at various levels in society.

Between 2001 and 2005, in a series of decisions, the Riksdag laid down 72 interim targets. These targets flesh out the environmental quality objectives by describing the situation in a given year, usually 2010.

The Swedish Chemicals Agency is responsible for the objective A Non-Toxic Environment.

The environmental quality objective A Non-Toxic Environment, with its current nine interim targets, was adopted by the Riksdag in 2005. This environmental quality objective, in the view of the Environmental Objectives Council and the Government, is the one that is hardest to achieve.

This paper is a brief summary of the basis of the second in-depth evaluation of the environmental quality objective A Non-Toxic Environment, with special focus on action and assessments.

# **The Swedish Chemicals Agency proposes tough action to achieve the Environmental Quality Objective A Non Toxic Environment**

## **Tough action is needed to achieve A Non-Toxic Environment**

It will be difficult to achieve the environmental quality objective A Non-Toxic Environment within a generation. The difficulties mainly spring from the diffuse dispersal of environmentally-hazardous and health-hazardous substances from goods, on the formation of unintentional compounds and on the fact that persistent and bioaccumulating substances already in the environment will remain for a long time. Additionally, people handle a great number of chemicals (not least in the working environment), the health hazards of which have been insufficiently studied.

To achieve A Non-Toxic Environment, tough action is needed in a number of areas. The Swedish Chemicals Agency therefore proposes a number of measures involving:

- continued improvement of preventive chemical control to prevent harm before it occurs;
- tougher legislation, more effective inspection, and strong implementation of new rules;
- a Swedish push for global chemicals work;
- high-level Swedish research to improve the work on A Non-Toxic Environment;
- reduced use of hazardous substances in goods, in the first hand by companies that use chemicals, but also other users of goods containing hazardous substances.

## **Chemicals are dispersed in the environment**

Global production of chemicals has climbed steeply and is expected to continue, primarily in Asia and Latin America. Chemicals cross national borders through trade, and substances are dispersed when goods are produced, used, recycled, burned or sent to landfill. They are also dispersed through leaching to surface and ground water from contaminated areas. The environmental levels of some substances studied in long time series are on the decline while levels of others are rising, or demonstrate variations which make unambiguous assessment of trends in the environment impossible. There are big gaps in our knowledge about the environmental presence and potential environmental effects of most chemicals. Most Swedish industrial sources today typically emit at low levels but in large flows, for example in flue gases and waste which can sometimes contain unintentionally formed substances such as dioxins.

## **Preventive work the cornerstone – hazardous substances in goods increasingly important**

The work towards A Non-Toxic Environment is fundamentally designed to prevent hazards to human health or the environment caused by chemical substances, products and goods. Knowledge of the properties of chemical substances and their dispersal is necessary if we are to understand the means by which the substances could damage human health and the environment, and prevent this damage from occurring. Environmental monitoring provides important knowledge that contributes to our understanding of causal relationships. In the present context of proposing new wording and new interim targets, the cornerstones of the objectives system remain, with interim targets for knowledge, information, products and handling. This means that chemical substances and products must be well investigated in terms of their risks to health and the environment, and that knowledge must be passed on to

those who use these substances and products. We must also choose products that are as low in hazards as possible, and ensure that substances that are hazardous to health and the environment are, where possible, replaced with less hazardous, and preferably non-hazardous, ones. Health and environmental risks associated with the use of chemicals must also be avoided by safe handling procedures.

Most of the macroeconomic resources allocated to the work to secure a non-toxic environment consist of costs for handling already dispersed environmental toxins, in decontamination programmes and environmental monitoring. A smaller share of resources is devoted to preventive control of chemicals to avoid future damage and expensive decontamination. As long as hazardous substances are used in goods, however, we will still need decontamination and environmental monitoring. More resources for preventive work, and clearer focus on reducing the use of hazardous substances in goods are therefore crucial to the preventive work towards A Non-Toxic Environment.

### **Legislation needs strong implementation and good compliance – and more stringency**

With REACH, the EU now has the most comprehensive and stringent body of chemicals legislation in the world. In the near future we are likely to see new and more stringent EU legislation of plant protection products. This, together with existing legislation (for example work environment legislation) will be key to our chances of achieving A Non-Toxic Environment. The next 10–20 years of implementation of REACH will be of particular importance in this respect. Stringent national inspection and good cooperation between the EU Member States are fundamental to good compliance with the regulations. It is important that the outcome of forthcoming revisions of the Regulation is greater stringency.

### **Sweden must act globally to achieve A non toxic environment**

Many environmental problems are global in nature. Chemicals cross borders in the air, water and via trade. This means that action in other countries impacts on Sweden's chances of achieving A non toxic environment. Sweden should act to ensure that the points in the global chemical strategy (SAICM) are put into practice around the world. Greater stringency in international conventions on chemicals is also important. Sweden should continue to be a leader in chemicals policy at global level. We know that control of chemicals is less stringent than in Europe in a number of developing countries where chemicals production is on the rise.

### **Research – key to the chances of achieving A NonToxic Environment**

Solid research into environmental toxicology is important if we are to be able to assess the scope of various chemical risks to health and the environment. Swedish environmental toxicology research is also important if Swedish authorities are to achieve good outcomes in the EU and in other international work. Green Chemistry is a globally burgeoning field of research which is based on a joined-up approach to chemical risks to health and the environment. This research can help reduce or eliminate the use or production of some hazardous substances.

The Swedish Chemicals Agency is of the view that the shift towards sustainable chemicals use is proceeding too slowly. One means of speeding developments is to establish an institute for the sustainable production and use of chemicals. We propose that the Government initiate a government commission to investigate the potential for establishing such a research institute.

## **Business – the principal actor in achieving A NonToxic Environment**

The new EU legislation gives companies much better tools for reducing chemical risks to health and the environment. In the field of the working environment, REACH supplements current legislation. Improved knowledge allows companies to select less hazardous substances in their development work and in their choice of chemical products and goods. Consumers, green organisations and trade unions can also play an important role. The law is inadequate for the achievement of A Non-Toxic Environment. The body of regulation governing goods is also relatively weak. Voluntary measures and market-driven policy instruments can be helpful. Economic policy instruments have only had limited application in the field of chemicals.

Much work remains to be done on goods. There is a growing need to remove hazardous substances from goods, and more attention must be paid to the subject. There is also a clear need to carry out more inspection of goods, and also to carry out random analyses to discover any hazardous substances in goods.

## Assessments

The Swedish Chemical Agency assesses here the Environmental Quality Objective including assessments of the nine interim targets adopted by the Riksdag in 2005. The Swedish Chemical Agency also proposes new detailed specifications and new wordings, not quoted in this summary, of the interim targets for 2010.

### The generation objective

A Non-Toxic Environment - the Environmental Quality Objective

*“The environment must be free from man-made or extracted compounds and metals that represent a threat to human health or biological diversity.”*

*The outcome within a generation for this environmental quality objective should include the following:*

- The concentrations of substances that naturally occur in the environment are close to the background concentrations.*
- The levels of foreign substances in the environment are close to zero and their impact on the ecosystems are negligible.*
- All fish in the seas, lakes and watercourses in Sweden are fit for human consumption with regard to the contents of foreign substances.*
- Overall exposure in the working environment, the natural environment and the indoor environment to particularly hazardous substances is close to zero and, as regards other chemical substances, to levels that are not harmful to human health.*
- Polluted areas have been investigated and cleaned up where necessary.*



The Swedish Chemicals Agency's assessment is that the generation objective cannot be achieved in the time frame given. Environmental levels of known environmental toxins such as dioxin-like substances, mercury and cadmium will remain a problem. New additional problematic substances are also being discovered on an ongoing basis; an example of this is perfluorated substances, which are slow to biodegrade. Poor knowledge of the hazardous properties of many chemicals and their environmental levels makes it difficult to judge how far we are from achieving the objective.

To make the generation objective clearer, the Swedish Chemicals Agency proposes that two of the detailed targets of the objective be reworded.

## **Interim target 1 – Knowledge and information**

*By 2010 data will be available on the properties of all deliberately manufactured or extracted chemical substances handled on the market.*

*For substances handled in larger volumes and for other substances which, for example after initial general tests, are assessed as being particularly hazardous, information on their properties will be available earlier than 2010. The same information requirements will apply to both new and existing substances.*

*In addition, by 2020 data will as far as possible be available on the properties of all unintentionally produced and extracted chemical substances.*



The Swedish Chemicals Agency's assessment is that the current interim target cannot be achieved in the time frame given. The new chemicals regulation REACH means that important steps will be taken, but the knowledge requirements in REACH are inadequate for low-volume substances. Furthermore, knowledge requirements must be tightened for some product groups covered by other legislation. An example of this is the environmental hazard posed by pharmaceuticals.

The Swedish Chemicals Agency proposes that the interim target be reworded and that a number of points be added explaining what the interim target means, thus improving opportunities for follow-up.

## Interim target 2 – Knowledge and information

*By 2010 finished products will carry health and environmental information on any hazardous substances they contain.*



The current interim target cannot be achieved in the specified time frame. Information about hazardous substances in goods is crucial if producers and consumers of goods are to be able to avoid substances that are harmful to health and the environment, and help reduce the risks to health and the environment posed by hazardous chemicals.

The EU has long had a health and environmental information system for chemical products, but for other products, requirements for health and environmental information about ingredients is the exception rather than the rule. The EU's new chemicals regulation REACH introduces the requirement that information must be supplied where goods contain particularly hazardous substances. This is an important step which boosts our chances to achieve the target in the long term. The information requirement however needs to be extended to apply to all substances that are hazardous to health and the environment, not just the particularly hazardous ones. Requirements that users of goods be provided with health and environmental information about hazardous ingredients are also needed in other directives (the Biocidal Directive and other product directives), and greater inspection of compliance with rules concerning goods is important.

Greater acceptance for information, as well as consumer demand and a generally increased demand for information about substances in goods, are all important and must be stimulated in Sweden, in the EU and in other international contexts.

The Swedish Chemicals Agency proposes that the interim target be extended and revised.

## Interim target 3 – Phase-out of particularly hazardous substances

*Newly manufactured finished products will as far as possible be free from:*

- *new organic substances that are persistent and bioaccumulating, new substances that are carcinogenic, mutagenic and reprotoxic, and mercury, as soon as possible, but no later than 2007;*
- *other carcinogenic, mutagenic and reprotoxic substances, and endocrine disrupting substances or highly allergenic substances by 2010, if the products that contain them are intended to be used in such a way that they will enter natural cycles;*
- *other organic substances that are persistent and bioaccumulating, and cadmium and lead, by 2010.*

*Nor will these substances be used in production processes unless the company can prove that human health and the environment will not be harmed. Already available finished products*

*containing substances with the properties listed above, or mercury, cadmium or lead, will be handled in such a way that the substances in question are not released to the environment.*

*The dispersal to Sweden by air or water of substances covered by this interim target will decrease continuously.*

*This interim target applies to substances that are man-made or extracted from the natural environment. It also applies to substances giving rise to substances with the above properties, including those formed unintentionally.*



The interim target is felt to be unachievable in time, although the EU chemicals regulation REACH is an important step that improves chances of achieving the interim target. REACH introduces a system of time-limited permits for particularly hazardous substances which largely agrees with the substance groups covered by the interim target. All other uses than those set out in the permit will be prohibited. The permit system will put pressure on companies to replace particularly hazardous substances with less hazardous alternatives. For other hazardous substances, including those in imported goods, REACH has a restriction system that is similar to the current Restrictions Directive.

The Swedish Chemicals Agency proposes that the interim target be extended and revised.

#### **Interim target 4 – Risk reduction**

*Health and environmental risks associated with the manufacture and use of chemical substances will be reduced continuously up to 2010, as measured by indicators and ratios to be established by the competent authorities. Over the same period, the occurrence and use of chemical substances which impede recycling of materials will decrease. This target applies to substances not covered by interim target 3.*



The interim target cannot be achieved by 2010. Most known chemical risks will be reduced, but at the same time new substances, technologies and areas of use are coming onto the market which can entail new opportunities, but also new risks.

Existing indicators do not point to any unambiguous trends. There is however a lack of basic knowledge about the hazardous properties of many substances and about their presence in goods, as well as about exposure levels in the work environment and natural environment. The EU's new chemicals legislation REACH is thought likely to lead to significant work on risk reduction at a large number of companies.

The Swedish Chemicals Agency proposes that the interim target be extended and revised. Special attention should be paid to children and sensitive groups.

## **Interim target 5 – Environmental quality indicators**

*By 2010 guideline values will be established by the competent authorities for at least 100 selected chemical substances not covered by interim target 3.*



The interim target has been achieved. The authorities have established environmental quality indicators for more than 100 substances. Work on environmental quality indicators can proceed without a special interim target.

## **Interim targets 6 and 7 – Polluted areas**

### ***Interim target 6***

*Studies will have been carried out and, where necessary, appropriate action will have been taken by the end of 2010 at all contaminated sites that pose an acute risk on direct exposure, and at contaminated sites that threaten important water sources or valuable natural environments, today or in the near future.*

### ***Interim target 7***

*Between 2005 and 2010, measures will be implemented at a sufficiently large portion of the prioritized contaminated sites to ensure that the environmental problem as a whole can be solved by 2050 at the latest.*



Interim targets 6 and 7, which both involve polluted areas, are reported and assessed together since they interact with each other.

The Swedish Chemicals Agency and the Swedish Environmental Protection Agency assess that at least temporary measures will have been carried out on most of the areas that are today regarded as belonging to interim target 6. Interim target 7 will not be achieved by 2010 either, but with continued favourable conditions, interim target 7 will be met in terms of what is to be achieved by 2050.

The main reason that the interim target will not be completely achieved is that the field of remediation of contaminated sites is a relatively new one and is both interdisciplinary and complex. This means that knowledge building and the build-up of organisation and markets have taken time. To achieve the targets, the pace of publicly and privately financed remediation must increase and knowledge of polluted areas needs to be generally improved.

The agencies propose that interim target 7 to 2050 should stand, that priority in future is given to areas that in the very short term can spoil substantial values, and that an addendum be made to the interim target concerning the dissemination of knowledge about polluted areas.

## **Interim target 8 – Dioxins in food**

*By 2010 clear action programmes will have been established to bring about a continuous decrease in levels in food of dioxins harmful to humans.*



The interim target is deemed achievable in time, but if further effective measures are to be applied, we need to know more about the contributions of different sources to dioxins in food. To remedy obvious gaps in knowledge and data, more research and investigative work is needed about sources and properties of substances formed unintentionally through human activity. We also need measures in the shape of systematic searches of the environment and characterisation of hitherto unidentified and unintentionally formed substances with particularly hazardous properties in accordance with interim target 3, so that their further dispersal can be limited as early as possible.

The Swedish Chemicals Agency proposes a new interim target which is extended to include unintentionally formed substances with particularly hazardous properties in accordance with interim target 3, not just dioxins.

## **Interim target 9 - Cadmium**

*By 2015 the dietary and occupational exposure of the population to cadmium will be at a level that is safe from a long-term public health point of view.*



The interim target will be difficult to achieve. Levels in food and arable land are expected to fall, but there is great uncertainty about what safe exposure levels are and what measures are necessary in relation to this.

Further information:

<http://www.kemi.se/>

<http://www.miljomal.nu/>

<http://www.sweden.gov.se/>



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