

Bruxelles, 6 November 2003

## **Presence of persistent chemicals in the human body – results of Commissioner Wallstrom's blood test**

*The presence of persistent chemicals in the human body and their potential harmful effects is amongst the problems addressed by the European Commission's recent proposal for a new regulatory framework for chemicals (REACH - see IP/03/1477). To illustrate this problem, Margot Wallström, European Commissioner for Environment, submitted a sample of her blood for testing. The results of these tests, which give a record of the chemicals to which Mrs Wallström has been exposed and which have accumulated in her body, have been published by the European Commission today.*

Commissioner Wallström participated in a bio-monitoring survey conducted by World Wildlife Fund (WWF) sending 40 ml of her blood for screening to the Department of Environmental Sciences of Lancaster University in the United Kingdom. Mrs Wallström was checked for 77 man-made chemicals, which can be found in everyday products such as TV sets, carpets, furniture and food. The 77 chemicals fall into three groups: PBDEs (Poly Brominated Diphenyl Ethers), PCBs (Poly Chlorinated Biphenyls) and OCPs (Organo-Chlorine Pesticides).

Chemicals belonging to these groups are in general very persistent (they do not break down and thus remain in the environment for a long time) and bio-accumulative (they build up in the human body and in animals over time). Persistent and bio-accumulative chemicals are also passed on to children during pregnancy and breast-feeding.

These chemicals are often 'hormone disrupting', which means that they interfere with the hormone and reproductive systems of humans and animals that are exposed to them. Developing babies in the womb are particularly at risk. In animals, endocrine disrupters have even been known to cause gender changes.

Out of the 77 chemicals analysed, the laboratory in UK found 28 chemicals in Mrs Wallström's blood.

The survey covered a sample of 156 people from the UK (England, Scotland, Northern Ireland and Wales) and Belgium. Both women and men were included, with ages ranging from 22 to 80 years. Such surveys are not frequently conducted and the results can, therefore, not easily be compared to any European-wide data.

## **PBDEs - Poly Brominated Diphenyl Ethers**

### ***Test results:***

The blood test of Mrs Wallström contained a number of PBDEs. The predominant source of these is Penta-BDE and Octa-BDE.

### ***Main features:***

PBDEs are man-made chemicals used as flame-retardants in many household textiles such as curtains and materials used in sofas, cushions and mattresses. PBDEs are incorporated in the polyurethane foam used for furniture and upholstery. PBDEs are also used as flame-retardants in rigid plastic in cars and consumer goods such as electrical appliances, including TV and computer screen casings.

PBDEs have been found in animal tissue, water and sediments far from the point where they were released, giving rise to concern about the possible global impacts of their releases. PBDEs have also been detected in air samples, indicating that the general population can also be exposed to them through inhalation. The main exposure to PBDEs is probably diet, particularly food with high fat content, such as fatty fish.

Once PBDEs enter the body, they break down into so-called PBDE metabolites, some of which could be harmful to human health. PBDEs have a tendency to build up in the human body over many years. They are stored mainly in body fat and tend to concentrate in breast milk fat. They can thus be passed on to children during breast feeding, or to unborn babies through the placenta.

It is unclear if PBDEs can cause cancer in people. One substance in this group has already been found to cause cancer in animals.

### **EU Legislation:**

Both Penta-BDE and Octa-BDE have recently been banned under Directive 76/769 on restrictions of marketing and use. The ban will enter into force in the Member States on 15 August 2004. It will be incorporated into the new chemicals legislation system REACH, when this is adopted and has entered into force.

## **PCBs - Poly Chlorinated Biphenyls**

### ***Test results:***

The blood test of Mrs Wallström contained a number of different PCBs.

### ***Main features:***

PCBs are industrial chemicals that were previously widely used in electrical equipment, such as transformers or capacitors, because they don't burn easily. They were also used in paint additives and as flame retardants in plastics.

PCBs used to enter the air, soil and water during manufacture or product use. They would evaporate from "open applications" such as paints or sealing masses. In air, PCBs can be carried over long distances and have been found in snow and sea water in areas far away from where they were released into the environment. As a consequence, PCBs are found all over the world, especially in the Arctic, where they condensate.

The main source of exposure for the general population is through food, especially contaminated fish.

Once PCBs are in the human body, they can be stored for years mainly in the fat and the liver, but smaller amounts can be found in other organs as well. PCBs accumulate in milk fat and can enter the bodies of infants during breast-feeding.

It is difficult for scientists to establish a clear association between PCB exposure levels and health effects. However, excessive exposure to PCBs (e.g. from continued high doses) may affect the brain, eye, heart, immune system, kidney, liver, reproductive system, skin, thyroid gland and the unborn child, and may cause cancer. Both the US Environmental Protection Agency and the International Agency for Research on Cancer (IARC) have determined that PCBs are probably carcinogenic to humans.

### **EU legislation:**

PCBs are banned under the 2001 Stockholm Convention on Persistent Organic Pollutants (POPs). The Convention has been signed by 150 governments and the European Union. It will enter into force following the submission of the 50<sup>th</sup> instrument of ratification expected early 2004. Currently, 40 ratifications have been submitted.

The EU will be able to ratify the Stockholm Convention only after the Council and the European Parliament have adopted the Commission proposal (presented in June 2003) for a Regulation to implement it. The Regulation provides for a total ban of all POPs that are intentionally produced, without any possibility of exemption. If adopted, no chemicals manufacturer in the EU may request an Authorisation under REACH for any of these POPs.

### **OCPs - Organo-Chlorine Pesticides**

#### ***Test results:***

The blood test of Mrs Wallström contained substances from this group, in particular DDT.

#### ***Main features:***

Organo-Chlorine pesticides are a group of pesticides developed and widely used between the 1950s and the 1970s. Many, including DDT, have been banned after they were belatedly found to be highly persistent in the environment and to cause long-term toxic effects in wildlife.

DDT (dichlorodiphenyltrichloroethane) is an insecticide widely used until the 1960s to control insects in agriculture and insects that carry diseases such as malaria. Although it is banned in many countries, including all EU Member States, DDT is still employed in some developing countries affected by malaria.

DDT and its breakdown products (DDE and DDD) are persistent substances that can travel long distances through atmosphere and in water. These substances are still widely found in food and the environment, as well as in the tissue of living organisms in which they build up. The predominant route of exposure for the general public to DDT and its breakdown products is through the diet. DDT present in the mother can enter an unborn baby through her placenta and later it can be passed on to children during breastfeeding.

DDT affects the nervous system. People who accidentally swallowed large amounts of DDT became agitated and had tremors and seizures. These effects went away after the exposure stopped. Studies have shown that women with high amounts of DDE in their breast milk were unable to feed their babies as long as women with lower levels. It has also been shown that women who had high amounts of DDE in their breast milk had an increased chance of having premature babies.

In animals, short-term oral exposure to small amounts of DDT or its breakdown products has had harmful effects on reproduction. Thus far, there is no conclusive evidence that exposure to DDT and its breakdown products at the levels found in the environment, affects reproduction and development in humans. The possible association between exposure to DDT and various types of cancers in humans has been extensively studied, particularly breast cancer, but no link has yet been established.

### **EU legislation:**

DDT was partly banned for agricultural uses in December 1978 (Directive 79/117/EEC) with exemptions for several minor uses (tree-nurseries, sugar beets, etc.). This Directive confirmed and harmonised several initiatives already taken by Member States since 1972. The total ban for agricultural uses occurred in March 1983, with Directive 83/131/EEC. Today, DDT is only used in the EU as an intermediate in the production of the pesticide dicofol, where it is handled in closed production systems.

DDT is a Persistent Organic Pollutant (POP). It is covered, as is the case for PCBs, by the Stockholm Convention and the Commission proposal of a Regulation to implement the Convention. When adopted, any intentionally produced DDT will be totally banned in the EU.

### **REACH**

The presence of persistent and bio-accumulating substances in the blood test of Mrs Wallström, shows that nobody can escape contamination by chemicals. Despite intense research on some of the chemicals, there is a general lack of knowledge about the effects on human health and the environment of more than 99 % of the total volume of chemicals on the market. It is therefore essential to systematically examine all chemicals used in significant quantities in the EU.

REACH, a new regulatory framework for chemicals proposed by the Commission on 29 October 2003, has been devised to tackle this problem. It stands for Registration, Evaluation, Authorisation and Restrictions of Chemicals. Producers and importers of chemicals in volumes greater than 1 tonne per year will be obliged to register them in a central database with information on their properties, their uses and risks, and safe ways of handling them. Information will be required in proportion to the volumes in which a substance is produced and the risks it may pose. Substances of very high concern will require use-specific authorisations, and uses causing unmanageable risks will be phased out as the European Commission will continue to be able to issue partial or total bans.

Substances of very high concern include PBTs (persistent bio-accumulative and toxic substances), vPvBs (very persistent and very bio-accumulative substances), CMRs (carcinogenic, mutagenic and reproduction-toxic substances) and substances identified as having serious and irreversible effects on humans and the environment equivalent to the other three categories. The latter include endocrine disrupters.

Most of the substances included in the survey are PBTs or vPvBs. If REACH had been in place 30 years ago, it would have identified these substances and would have made sure that they were used only with the appropriate risk management measures, or if the risks were unmanageable, then their use would have been restricted or banned.

Under REACH, already existing bans in EU legislation will remain in force. Applications for the Authorisation of substances banned in the EU will thus not be possible. For example, PCBs and DDT are both POPs banned under the Stockholm Convention, which is expected to be implemented in the EU with a new Regulation in early 2004. No applications for Authorisations of the use of these substances will be accepted.

For more information, please visit the following Web site :

<http://europa.eu.int/comm/environment/chemicals/whitepaper.htm>