

PHASING OUT HAZARDOUS CHEMICALS AND PRODUCTS: LESSONS FROM EUROPE

We need to change the way we regulate, produce and use materials and products in society

The explosion of the chemical industry after world war two has left us with a global legacy of pollution from persistent chemicals that accumulate up the food chain. People in the Great Lakes basin now have 300 to 500 synthetic chemicals in their bodies - chemicals that did not accumulate in the bodies of their grandparents. The effects of such chemicals - many known to be carcinogenic or reproductive toxicants, are increasingly implicated in the rising rates of cancer in the industrialized world. In the United States cancer now affects 1 in 2 men and 1 in 3 women. The overall increase of all cancers in the US between 1950-1995 was 55%, of which lung cancer, primarily attributed to smoking, accounted for about 12%. (Epstein, 1998)

Recent evidence initially based on wildlife observations has revealed that chemicals can also disrupt our endocrine or hormonal system. (Colborn et al, 1993) The developing fetus is most at risk to hormone disrupting chemicals and the effect of disturbing the delicate development of organs during this crucial time is irreversible. For example, it is speculated that the doubling of testicular cancer and fifty percent drop in sperm production in many industrialized regions could originate from chemical disturbances during the fetal development of reproductive organs. ()

When chemical production escalated the US government adopted risk assessment as its policy to control chemical use and this has been intentionally exported to other countries. (Tickner, 1995) In short risk assessment is the attempt to manage chemical use by first assessing the known hazard of a chemical, estimating what dose both people and animals are exposed to, determining what that dose will do to the human or animal, and then estimating what safe level should be set. In reality risk assessment has allowed a business as usual approach to chemical management. This is because the burden of proof has been put on the regulator or citizen to prove, beyond doubt, that a chemical is hazardous and should be withdrawn.

There exists fundamental problems with conducting sound scientific risk assessments for chemicals.

- Of the 3,000 chemicals used in high volume (one million pounds per year or more), 98 percent lack at least some fundamental health screening data and 43 percent have no basic toxicity data. ()
- To test just the most common 1,000 toxic chemicals in combinations of three would require at least 166 million different experiments. ()
- In the European Union a programme launched in 1993 to assess the safety of over 20,000 chemicals sold in quantities of ten tonnes or more per year has yet to yield a single official mandatory legislation. ()
- Yet up to 1,000 new chemicals enter the market each year. ()

Using the Precautionary Principle to achieve the phase out of hazardous chemicals

In 1984 at the Second Ministerial Conference on the North Sea the government of Germany proposed the use of the Precautionary Principle as the basis for environmental protection. This calls for action before definite proof of harm is demonstrated. It reverses the burden of proof and puts the onus on the producer to justify the safety of a chemical or product - similar to what is required for the pharmaceutical industry.

Over the years the precautionary principle has been endorsed and promoted by many European legislators, public advocacy groups and sustainable product designers. In fact clean production and sustainable consumption is the ultimate goal of the precautionary principle. It is not a business as usual approach, but instead puts the focus on using safer substitutes.

European countries are signatory to a variety of important conventions that address the need to phase out toxic land-based chemicals into the marine environment:

The OSPAR Convention (1992) - 14 nations around the North East Atlantic agreed to eliminate discharges of persistent, bioaccumulative toxic substances, particularly organohalogenes by the year 2020.

The Barcelona Convention for the Mediterranean (1996) achieved similar wording as did the Helsinki Convention for the Baltic (1998).

In 1995 the 14 Ministers who signed the Esberg Declaration for Protection of the North Sea agreed:

that the objective is to ensure a sustainable, sound and healthy North Sea ecosystem. The guiding principle for achieving this objective is the Precautionary Principle. This implies the prevention of the pollution of the North Sea by continually reducing discharges, emissions and losses of hazardous substances thereby moving toward the target of their cessation within one generation (25 years) and the ultimate aim of the concentration in the environment near background values for naturally occurring substances and close to zero concentrations for man-made synthetic substances.

The Esberg Declaration further defined hazardous substances as substances or groups of substances that are toxic, persistent and liable to bioaccumulate. It was agreed that toxic should be taken to include chronic effects such as carcinogenicity, mutagenicity, teratogenicity and adverse effects on the function of the endocrine system.

The cessation of hazardous emissions was to be achieved by pursuing the development and use of clean technology for production processes, and, to give priority to the development of environmentally sound products, taking into account the whole life cycle of substances or products.

2. What are countries doing to achieve this?

Some countries in Europe are using the Precautionary Approach to environmental regulations and chemical policies.

UK 1997/Implementing the Precautionary Principle.

When it was first noticed three years ago that male fish downstream of textile washing plants in the UK began producing egg yolk - normally a function of female fish - UK

regulators realized an estrogenic chemical was probably causing them to do so. They asked textile manufacturers to substitute their use of nonyl phenols and switch to a safer detergent. They took action based on a weight-of-evidence approach that nonyl phenols are endocrine disruptors and probably the cause of the problem.

Although this example may seem like a common sense course of action, industry maintains that any action to phase out hazardous materials should only be based on sound science and risk assessments. This is the crux of current debates around industrial policy development. The deadlock has been broken by two new progressive policy developments in Denmark and Sweden.

New Chemical Policy from Denmark (January, 1999)

In January this year the Danish Government issued its new chemicals policy. It includes the following:

Producer Responsibility. Producers and importers have the responsibility to assure a product or substance does not constitute a risk in normal use. They must assess chemicals and demonstrate the level of hazard in their materials and products.

Chemical Bans. Substances that cause well known irreversible human health effects or that bioaccumulate or are persistent should be banned from use. A Ban list of such substances will be made. Other possible instruments include product taxes, voluntary agreements on phase-outs, and eco-labels. The choice of instruments will depend on the substance's dangers, use and dispersion in the environment. For example on April 1, 1999 Denmark banned the marketing of soft PVC plastic toys containing phthalates (softeners). Companies have one year to sell their stock; inflatable products must be eliminated by January 1, 2003.

Pesticides prohibition in non-agricultural, private areas is being drafted. An agreement to phase out the use of pesticides in municipalities and counties was signed at the end of 1998. A tax on pesticide use will be doubled to encourage the transition to organic food production. The substitution principle will be applied for all plant protection materials eg. a product can be denied approval if other products or methods, which are less harmful to the health or environment, are available for the same purpose. These substitutes will be actively promoted.

Retroactive Bans.

All existing substances (approximately 10,000) that have not been assessed within a fixed date, eg the year 2005, should be considered new substances and go through notification procedures before they can be used.

Consumer Access to Information. Public right to know will be increased on chemical use and product labelling. The Danish EPA has established a chemical-query telephone service which has become very popular. By calling this number consumers can get information on the regulation of chemical substances. This information has also been placed on the Danish EPA web page. Public access to product registers will be amended to allow greater information access.

Increased public accountability: To increase public and retailer's access to information on potential hazards in materials the Danish EPA has started to prepare an easy to understand booklet on information laws regulating chemicals. Entitled "Facts of Chemistry" it will be distributed and made available on their webpage. It will list what

companies are required to do, such as provide detailed information on hazard assessment for the monitoring authorities (which many companies currently do not know). Companies which do not comply will have restrictions placed on their advertising.

Companies that market products prior to providing mandatory hazard information to the government, may be required to place notices in newspapers or magazines giving consumers the choice to return the product for a refund. Furthermore, companies that fail to observe the applicable rules may have their names published in newspapers.

Special focus on children. A report will soon be released detailing how each ministry will protect children and pregnant women from hazardous chemicals.

Sweden: Achieving the phase out of hazardous substances within one generation. (April, 1999)

On April 28, 1999 the Swedish Parliament adopted a new environmental bill which intends to achieve zero releases of hazardous substances into the environment within one generation. (SEO, 1998) Swedish Environmental Objectives (1998:145).

The new chemical policy now gives the government the tools to effectively implement the goals of both the Esberg Declaration and the OSPAR convention to eliminate emissions of hazardous substances within 25 years. The bill was agreed to by all political parties.

Whole groups of chemicals with intrinsic hazards will be targeted

Similar to Denmark, hazard assessment will be the basis of chemical testing to meet the generational goal of phasing out substances which should not normally occur in products and processes. This approach will be directed at organic, manmade substances that are bioaccumulative and persistent, at cadmium, lead and mercury, and at substances that are known to be harmful.

The government and industry will also assess chemicals in groups, rather than individually. This is because the government found the present system for assessing hazards and risks of existing chemicals is extremely time and resource consuming and will need several centuries before the majority of manufactured chemicals have been individually assessed. To clarify this approach even more the definition of hazardous will be anything that is persistent and bioaccumulative.

Achieving clean production by concentrating on products and market mechanisms

Of most significance is the switch in focus from chemicals to product life cycle. This is because product groups that contain problematic chemicals have expanded substantially during the last years, eg. electronic equipment such as refrigerators, deep freezes, air conditioning equipment, cellular phones, etc. To this end the government will direct more public money to control substances in products and develop cleaner products.

By the year 2007 all products on the market are to be free from

- substances that are persistent and liable to bioaccumulate;
- lead, mercury and cadmium;

- substances that give rise to serious or irreversible effects on health or the environment

Cleaning up manufacturing

By the year 2012 production processes should have developed to the extent that they are free from the deliberate use of persistent and bioaccumulating substances, or lead, cadmium or mercury and the releases are free from substances that cause serious or chronic health effects.:

PVC and other hazardous plastics do not belong in a future ecocycle society

Sweden has long been concerned with polyvinyl chloride (PVC) plastic, commonly known as vinyl. In 1993 the government's Ecocycle Commission recommended, that based on the plastic's life cycle and use of hazardous ingredients, PVC does not belong in an ecocycle society. The then Minister for Environment, Anna Lindt declared it is no longer a question of if, but how to phase out PVC.

The new chemical policy reinforces this view stating that taking into consideration the precautionary principle and the present limited knowledge of its long term health and environmental effects, PVC plastic materials do not belong in the future ecocycle society.

By 2007 the latest, all plastics will have eliminated:

- persistent bioaccumulating substances,
- lead, mercury or cadmium,
- or substances that may cause serious or irreversible effects on health or the environment

Furthermore, a plastic material must be substituted by other materials if it contains any of the substances mentioned above.

Regarding PVC specifically, present PVC plastic materials will be substituted by materials that are environmentally adapted in the long term as soon as possible, and no later than 2007. New PVC materials (eg having non-lead stabilisers) will be phased out in consultation with all stakeholders.

Other Product Restrictions

- The government intends to ban the use of azo-dyes in textiles;
- All uses of lead will eventually be phased out eg. lead in PVC plastic by the year 2000 and lead shot in hunting by 2004. Lead in batteries is still a problem due to no commercial alternatives that are superior from an environmental point of view.
- Most uses of mercury will be phased out by 2000 except for its use in the chloralkali industry which will be allowed to continue up to 2010.
- Nonyl phenol ethoxylates, commonly used in paints, detergents, inks and pesticides will be phased out by 2000.
- Plasticizers, such as phthalates, which are used to make some plastics soft, will be phased out on a voluntary basis by 2005 the latest. However plasticizers in toys for children under the age of three will be banned.
- Chemical pesticides will continue to be targeted, particularly at European wide level.
- Brominated Flame Retardants found in plastics and electronics have been under

scrutiny in Sweden since 1989. New evidence of their dangers to workers in recycling plants and the doubling of levels in breast milk initiated calls in 1995 for a phase out of the 2 most studied compounds. Due to inadequate voluntary measures by industry, the government is now pursuing a ban of two of the most common types, PBB and PBDE

- Pentachlorophenol wood preservative has been banned in Sweden for 20 years and the country will continue to uphold past chemical restrictions as a new EU member state. Furthermore it will take a lead in the EU's current discussion about integrated product policy.

Who will implement all this?

It is recognized that implementation will only be possible if the policy is successfully adopted within all segments of society. This means adoption by individuals, private companies, municipalities, county authorities, government agencies, schools, universities, branch associations, trade unions, public interest organisations and others.

To this end the same type of tools used in Denmark will be employed. Government purchasing of cleaner products will be encouraged. Economic instruments will be increasingly used such as the successful differentiated tax on leaded gasoline which led to a rapid adoption to less environmentally hazardous additives.

Support and guidance to small and medium firms will be stepped up to increase the knowledge of hazardous chemicals and cleaner production alternatives.

Increasing consumer information

By the year 2002 all companies shall attach appropriate product information to their products allowing for informed consumer choice. The label will inform the user of the risks involved in the use of a product and of the precautions that should be taken. Information about a product's content of hazardous substances will be formulated in readily understandable terms.

Increasing Producer Responsibility

Industry will now have the main responsibility to show their products are safe.

Clean product guidelines

The following guidelines were published to aid manufacturers in their product development:

New products introduced onto the market are largely free from man-made organic substances that are persistent and liable to bioaccumulate, form substances that give rise to such substances and are free from man-made substances that are carcinogenic, mutagenic and endocrine disruptive - including those which have adverse effects on the reproductive system.

New products introduced onto the market are largely free from mercury cadmium, lead and their compounds

Metals are used in such a way that they are not released into the environment to a degree

that causes harm to the environment or human health.

Man-made organic substances that are persistent and bioaccumulative occur in production processes only if the producer can show that health and the environment will not be harmed. Permits are devised in such a way as to guarantee this guidelines.

Free Trade May be the Biggest Hurdle to Clean Production

Sweden is very aware of the possible constraints imposed by its recent European Union membership. Its formerly progressive environmental policies now have to be defended against possible charges of being a barrier to free trade within the EU.

For example, Denmark has consistently been attacked by drinks exporters for its ban on non-refillable beverage containers. It successfully defended its packaging decree in 1986 at the European Court and one use throw away beverage containers such as aluminum cans and tetrapak drink containers are still banned. For this reason Coca Cola and other leading soft drink manufacturers sell their beverage in refillable PET bottles. However the country is again being dragged into the legal fray this year and it remains to be seen if it can uphold its packaging restrictions.

Producer Responsibility for Product take-back versus Free Trade

Recent controversy over the European Union's draft legislation on Extended Producer Responsibility for waste from electrical and electronic products has clearly demonstrated the conflict of free trade versus environmental policy.

The draft mandatory directive will apply to all electronic products - from TVs to VCR, to computers to refrigerators. The EU has proposed:

- a reuse and recycling quota of 70% to 90% (incineration is excluded under this definition);
- the phase out (with some exceptions) of mercury, cadmium, lead, hexavalent chromium and brominated flame retardants in all electronic products sold after 2004;
- Producers and importers will be financially responsible for all product take-back;

The US government is currently lobbying against the EU proposed directive on electronic product take-back. They oppose regulatory phase outs, producer financial responsibility, the exclusion of incineration and the mandatory recycling targets. The US Trade Department insists these are restrictions to free trade. In response a growing coalition of environmental groups in both North America and Europe are highlighting this lobby against producer responsibility. They see this legislation as an essential boost to pressure manufacturers to phase out hazardous components in electronic products and ultimately the design of cleaner products and less waste.

Is Europe and North America on the same policy path? No.

Current chemical policy in both Canada and the US has no focus on products, product life-cycle or chemical restrictions and phase-outs based on chemical clusters. Our governments continue to support chemical by chemical risk assessment. There is no

push for product labelling and consumer right to know. Neither government has endorsed the Precautionary Principle for industrial production or environmental regulation.

In fact it would seem that we have regressed. The International Joint Commission for the Great Lakes in its 1992 Sixth Biennial Report concluded, among other things, that the use of chlorine and its compounds should be avoided in the manufacturing process.

Yet a review of the recent Bi-national Toxics Strategy for the Great Lakes takes no where near such a wide-ranging view. Rather it lists less than thirty substances for voluntary and virtual elimination with no product policy or clean production implementation strategy.

What can we do in Canada?

Demand similar action by the Canadian federal and provincial governments as proposed by Denmark and Sweden. In particular ask that all chemical listings for products be actively publicly disseminated via free phone access, disks and websites. Both the US and Canadian governments do this for company emission information - what we need now is product information. If we cannot get mandatory bans then we as consumers should have the right to know what is in the products we wish to buy.

Demand consumer access to all product information from producers. In particular use the 1-800 consumer information phone number to ask how you can view a full chemical ingredient listing for your product and ask them if they have a policy to phase out persistent and bioaccumulative ingredients in their products.

In this time of government deregulation and funding cuts, Products and market strategy is indeed the way forward.

References and Notes:

References to be added on my return May 18th.

Danish chemicals policy.

Danish Environmental Protection Agency
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Swedish chemicals policy

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- Also (http://www.kemi.se/default_eng.cfm?page=aktuellt/pressmedd/default_eng.htm)

EU initiative on producer responsibility for electronic product take-back: contact the

NGO in Brussels who is working on this:

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To join the North American campaign to demand producer responsibility :

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Website: www.svtc.org (more information on our lobby to support the draft directive can be seen here - sign onto our letter)