# SAICM's Four Emerging Issues

**SAICM is a global strategy addressing the need to assess and manage chemicals more effectively, but that does not mean it can do everything. It has to choose which priorities it will concentrate on, and in 2009 it has chosen four topics from a much longer list as emerging policy issues: they will feature prominently during the ICCM2 conference. This note gives some background information about the four issues and the reasons why they have been chosen.** *More detailed information on each of the issues will be available during ICCM2 and should offer material you can develop into news stories.*

The four emerging policy issues are:

- **nanotechnology and manufactured nanomaterials**
- **chemicals in products**
- **electronic waste**
- **lead in paint.**

A working definition of them is that each is "an issue involving the production, distribution and use of chemicals which has not yet been generally recognised or sufficiently addressed but which may have significant adverse effects on human beings and/or the environment".

Some of the other emerging issues listed by SAICM members (there were 36 in total) will feature in ICCM2 side events and round-table discussions.

## Nanotechnology

Nanotechnology is about developing very small objects, typically at a scale of a millionth of a millimetre . One nanometre is about 1/50,000th the width of a human hair. First generation nanotechnology is already on the market in products such as paints, coatings and cosmetics, medical appliances and diagnostic tools, clothing, household appliances, food packaging, plastics and fuel catalysts. Pharmaceuticals and applications in energy storage and production are being developed. Examples include:

- improved solar collectors and wind turbines

- better batteries
- replacements for highly polluting brominated flame retardants
- fuel additives and energy savers
- the provision of clean water.

But we have known for years that inhaling minute particles can damage the lungs, arteries and the entire cardio-vascular system. Are nanotech products similarly damaging? We just do not know. And what happens when they break down, or interact with other substances? Can nanoparticles penetrate the skin, or cross the blood-brain barrier? How do they behave in dust and fires? Will they distort commodity markets, disrupt trade and destroy jobs? The potential for nanotechnology to widen existing economic gaps is significant.

Organizations working on the problem include those of the Inter-Organization for the Sound Management of Chemicals such as the OECD (see www.oecd.org/env/nanosafety and www.oecd.org/sti/nano).

## Chemicals in Products

This category can sound a little puzzling. After all, every living being and inanimate object is made up of chemicals. Perhaps a simpler way of understanding it is as "chemicals in products where you might not expect to find them". We expect to find chemicals developed by humans in pesticides and pharmaceuticals, for example, but we may forget that they are also in tables, books and shoes. Key areas where chemicals management is of interest to all of us include toys, cars, furniture, clothes and electronics. So it is a global concern, with particular vulnerable groups facing heightened risks.  These can include children at all stages of development, and including before birth  - Sometimes the risks can be substantial  as from lead in jewellery, pthalates in plastics.

Cleaning up the effects of damaging chemicals used in products can be very expensive. One example is the use of PCBs (polychlorinated biphenyls, which can be seriously polluting) in insulated glass panes used in windows, mainly around the middle of the last century. One study estimated the environmental cost of removing and storing them across the European Union from 1971 to 2018 will be at least €15 bn.

There is one key reason why chemicals in products may have been an overlooked problem. Historically, reducing chemical risks has concentrated on releases to air and water during manufacturing. But we now realise that dangerous substances may also be released from products during use, and at the end of their useful lives.

One obstacle in tackling the problem has been the lack of information available on chemicals of potential concern. But industry is now developing several information systems, including the International Material Data System (IMDS) for cars, the Joint Industry Guide for Material Composition Declaration for Electronic Products (JIG), and the Electronic Product Environmental Assessment Tool (EPEAT), designed to help buyers choosing computers and monitors. One of the challenges is how to make such information available at all stages of the life-cycle of the product.

## Electronic Waste

This category is known also as e-waste or Waste Electrical and Electronic Equipment (WEEE). It comes from machines like fridges, air conditioners, microwave ovens, fluorescent light bulbs, washing machines, computers, mobile telephones, TVs and stereo equipment. The high rate of obsolescence in many of these means a fast turnover and a huge waste stream, much of which is exported from developed to developing countries, sometimes for further use as second-hand equipment and sometimes as end-of-life waste. E-waste has been identified as the world's fastest-growing waste stream, forecast soon to reach 50 m tonnes annually.

E-wastes contain persistent, bio-accumulative and hazardous (PBT) substances like heavy metals (lead, nickel, chromium, mercury) and organic pollutants like polychlorinated biphenyls (PCBs) and brominated flame retardants (BFRs). Many developing countries do not have the infrastructure to manage e-waste properly, or an effective regulatory framework. Nor do many people realise how dangerous the wastes can be. That explains why the African region and Peru urged SAICM to give this problem high priority.

The US Environmental Protection Agency estimates that by 2005 there were two million tonnes of unwanted electronic devices in the country, only 15-20% of them being recycled. The rest end up in landfills where they can contaminate ground water. But many states have banned e-waste from their landfills, meaning a huge export trade to get rid of unwanted equipment - an estimated 50-80% of e-waste is collected for recycling in the US each year.

As long ago as 2003 it was estimated there were 1.3 bn mobile 'phones in use across the globe, with the total predicted to double by 2006. By April 2008 the number had reached more than 3 bn - nearly one person in two worldwide. The International Telecommunication Union suggests Africa is the world's fastest-growing mobile market, with subscribers increasing between 1998 and 2005 by 1,000%: in Nigeria the increase from 2000 to 2006 was 10,000%, a rate made possible partly by imports of second-hand mobiles from developed countries. But too often the argument that this trade is "building bridges over the digital divide" is used as an excuse to obscure and ignore the fact that these bridges double as toxic waste pipelines to some of the poorest communities and countries in the world.

Globally about 500 m personal computers reached the end of their lives between 1994 and 2003, leaving 2,870,000 tonnes of plastics, 718,000 t of lead, 1,363 t of cadmium and 287 t of mercury to be disposed of, mostly as waste in developing countries.

The Basel Action Network, taking Nigeria as an example, has estimated that about 5 m PCs, weighing around 60,000 t, are imported annually through the port of Lagos alone. So much of this will be unusable scrap that 1,000-3,600 t of lead may need disposal every year. But Nigeria has virtually no capacity for material recovery from e-waste, so the scrap is discarded in local dumps.

Most developing countries have neither a well-established system for dealing with waste nor effective enforcement of regulations on hazardous waste management. Products are not labelled properly, and there is no system of communication to warn retailers, users and reprocesssors about hazards. The result is often burning in open dumps, backyard recycling, and disposal into surface water, threatening the health of millions of people who are unaware of the risks, and seriously damaging the environment. Published data has shown that levels of heavy metals and brominated flame retardants in e-waste imported into developing countries are far higher than threshold limits set in Europe and North America. The problem is so serious that it may prevent some countries reaching the Millennium Development Goals on water and sanitation by 2015.

SAICM stakeholders regard the continuing disposal  of e-waste in open dumps is a chemical time bomb unless there are urgent changes. There are particular problems for small island developing states (SIDS), as they do not produce e-waste but suffer from the poor disposal of imported products.

A major concern of developing countries is that when WEEE is mixed with EEE (electrical and economic equipment) the consignment is not shipped as waste, but as second-hand products, technically exempt from the Basel Convention on the

Control of Transboundary Movements of Hazardous Wastes. But many of them will be near the end of their lives - although they come from developed countries which prohibit the export of e-waste to the developing world.

Yet e-waste remains not just a problem but also an economic opportunity to developing countries and those with economies in transition, because it contains materials that are both hazardous and valuable.

## Lead in Paint

No level of exposure to lead is considered safe. The poisonous properties of lead have been recognized since ancient times. Lead is recognized today as one of the twenty leading risk factors contributing the global burden of disease. Eliminating lead exposure from gasoline has been one of the most significant environment health improvements in recent times.

Lead-containing products are however still widely made and sold across much of the developing world. It is very likely that most of the world's people live in countries where exposure to high lead levels in paint is frequent. Lead is in paint is the second largest source of exposure to lead following exposure from gasoline. Paint containing lead is used in infrastructure like bridges, industry (car parts) and for marine uses, as well as domestically.

The evidence of neurological damage, especially to children (whose intelligence can be impaired) and to workers in the lead industry is beyond doubt. Adults can suffer renal and cardiovascular damage. Some studies suggest a link to behavioural problems as well. Lead damage is irreversible, and its effects appear to persist into adolescence and adulthood. House dust is the commonest way in which children are harmed by lead in paint. The lead remains a risk for many years after the paint has been used.

The US, EU, South Africa and Australia are among those which have limited or banned the use of lead in paint. But the paint is widely available in other parts of the world, for instance in Russia, China and India.

Small intelligence changes in an individual child can have substantial impacts on an entire population. One consequence is economic losses: a 2002 study in the US concluded the economic damage attributable to loss of childhood intelligence associated with lead exposure was US $43.4 bn a year. And the US is probably near the bottom of the scale of childhood lead exposure.