

3.3 AIR



The increase in combustion of fossil fuels mainly by power generation, transport and industry has given rise to various environmental problems including the rise in atmospheric carbon dioxide, contributing to climate change and depletion of the ozone layer. However urban air pollution is of particular concern since it is of immediate interest to public health. The major pollutants include particulate matter, ground level ozone, nitrogen oxides, sulphur dioxide, benzene and volatiles including hydrocarbons and ammonia.

Poor air quality is known to result in negative health effects on the respiratory and cardiovascular systems. An individual's reaction to air pollutants depends on the type of pollutant he or she is exposed to, the degree of exposure, the individual's health status and genetic predisposition. People who exercise outdoors, for example, on hot, smoggy days increase their exposure to pollutants in the air.

The health effects caused by air pollutants range from subtle biochemical and physiological changes to difficulty with breathing, wheezing, coughing and aggravation

of existing respiratory and cardiac conditions. These effects can result in increased need for medications, increased doctor or emergency visits, more hospital admissions and even premature death. Particulate matter in the air decreases life expectancy of every European by, on average, almost one year¹⁷.



A significant improvement has been observed in the sulphur dioxide and benzene burdens in the Maltese islands. These changes can, with surety, be attributed to the introduction of cleaner, albeit more expensive fuel for motor vehicles and for energy generation. The introduction of lead replacement petrol in January 2003 brought about a considerable decline in benzene concentrations and in ambient lead levels. According to the National Statistics Office, leaded petrol was phased out in January 2003 and was replaced by LRP, which now has a benzene content of less than 1% as unleaded petrol. A drop in sulphur dioxide levels followed the introduction of low sulphur fuel in April 2004 for energy generation.

The general public tends to spend most of the time indoors with certain age groups such as older people and mothers with young children being the most exposed to indoor pollutants. Thus indoor air quality is an important consideration when investigating certain disease conditions. The rate of respiratory disease and incidence of allergic responses such as asthma has increased in recent years, as confirmed by results from the 2001 International Study on Asthma and Allergies in Children (ISAAC) study. Some of this rise may be associated with changes in the indoor environment. Malta was the second country out of the 195 eligible Parties to ratify the WHO Framework Convention for Tobacco Control on the 25th September 2003¹⁸. Smoking regulations introduced in 2004 ban smoking in any enclosed place open to the public except in designated smoking rooms approved by the Superintendent of Public Health. This however does not tackle the effect of tobacco

17 Source: WHO: <http://www.euro.who.int/air> (accessed 27th October 2008)

18 http://www.who.int/fctc/signatories_parties/en/index.html; http://www.fctc.org/docs/treaty/fca-fctc_

smoke in private homes. Indoor air pollution is of particular risk to age groups that tend to spend much time at home, such as the elderly and mothers with young children.

Although air quality investigations generally focus on outdoor air, indoor air quality is gaining recognition as a potential contributor to the impact on health. The indoor pollutants of concern include environmental tobacco smoke, carbon monoxide as well as nitrogen dioxide, house dust mite and various micro-organisms. World Health Organisation experts are in the process of developing new Air Quality Guidelines¹⁹ for a number of indoor air pollutants (formaldehyde, benzene, naphthalene, nitrogen dioxide (NO₂), carbon monoxide (CO), radon (Rn), trichloroethylene, tetrachloroethylene, PAH (BaP). These guidelines should be finalised and published by the end of 2009. Poor indoor air quality may arise from external sources, emanation from the ground (e.g. radon), building material, furniture and fittings, and from direct and indirect human activities. Indoor air quality is one of the proposed 'new' areas for discussion by both the European Commission and the World Health Organisation through the European Environment and Health process and also in the run up to the Fifth Ministerial Conference on Environment and Health.

¹⁹ http://www.euro.who.int/air/activities/20070510_2 (accessed 27th October 2008)

3.4 CHEMICALS

CEHAPE Regional Priority Goal IV: We commit ourselves to reducing the risk of disease and disability arising from exposure to hazardous chemicals (such as heavy metals), physical agents (e.g. excessive noise) and biological agents and to hazardous working environments during pregnancy, childhood and adolescence

Chemical safety has been identified as a priority under Regional Priority Goal IV of the CEHAPE²⁰. Hazardous chemicals, although useful in everyday life, may impact negatively on human health and the environment. Scientific evidence demonstrates that children and the developing foetus may be especially vulnerable to exposures to certain chemicals, and are also at increasing levels of risk depending on their stage of development. Chemical exposure has been linked to miscarriage, still birth, low birthweight, birth defects and infant mortality. It has also been linked to asthma, neurobehavioural and immune impairment in children and may cause precocious or delayed puberty in adolescents. Exposures to environmental chemicals during childhood may increase the risk of cancers and heart disease in adults. A National Cancer Strategy (National Cancer Control Plan-NCCP), due to be published by the Policy Development Department within the Ministry for Social Policy in early 2009 includes a section on the reduction of exposure to carcinogens, both occupational and environmental and also through the promotion of healthier lifestyles.

Three of the eight indicators related to RPG IV in the European Environment and Health Information System (ENHIS), established as the result of the commitment taken by the Budapest Conference concern chemicals (i) Persistent Organic Pollutants (POPs) in breast milk (data available for 10 WHO EURO Member States) (ii) exposure of children to chemical hazards in food, and (iii) blood lead levels in children.

Persistent Organic Pollutants (POPs), measured in human breast milk, which are chemical substances that persist in the environment, bio-accumulate through the food web, and pose a risk of causing adverse effects to human health and the

²⁰ http://www.euro.who.int/Document/EEHC/26th_EEHC_Madrid_edoc07.pdf

environment, even in regions where they have never been used or produced with consequent threats to the environment.²¹ The monitoring of these and other chemicals, and their effect on human health locally through bio-monitoring is being considered.

Several monitoring programmes for the presence of chemicals in food are conducted by the Public Health Laboratory within the Department of Environmental Health. Examples of such programmes carried out in 2008 include a sampling programme for monitoring of heavy metals in fish, pesticides in fresh fruit, acrylamide in breakfast cereals, potato products, biscuits, bread, jarred baby food, processed cereal based baby food and another for monitoring of dioxins and dioxin like PCBS in locally farmed fish, pork and beef, bread and dairy products.

During 1981-1983, Malta had one of the highest population blood and faecal lead levels in the world as indicated by a WHO supported study including Malta, Mexico, Sweden and Belgium²². Following several legislative efforts to ban the importation and manufacture of leaded paint for domestic use in 1984 and the use of inappropriate fuels in bakeries in 1989, the introduction of unleaded petrol and reduction of alkyl lead additives in 1991 and the ban on the use of leaded petrol in 2003, median blood lead levels in the adult population dropped by a drastic 70% from 247µg/L in between 1983 down to 50µg/L in 2005²³.

Mercury exposures may occur through ingestion of contaminated fish. Mercury in dental amalgam use for fillings by dentists is being controlled by the installation of amalgam filters on dental chairs to ensure its safe disposal. Careful cleaning up after breakages of mercury thermometers, whose sale and manufacture will be discontinued shortly, as well as safe disposal of Compact Fluorescent Lighting (CFL) or energy-saving bulbs which also contain smaller (0.5g) amounts of mercury, for recycling as Waste Electronic Equipment (WEE) is advocated. Mercury is neurotoxic and exposure to methylmercury during pregnancy may also negatively affect the unborn baby²³.

²¹ <http://www.chem.unep.ch/pops/>(accessed 3rd Nov 2008)

²² Dr. M. Sammut, Toxicology Department, Mater Dei Hospital Malta personal communication on comparative study on blood lead levels in Malta, Mexico, Sweden and Belgium.

²³ <http://www.greenfacts.org/en/mercury/mercury-1.htm#2>

Malta is party to the Basel, Rotterdam and Stockholm Conventions. The new European Community Regulation 'REACH' on chemicals and their safe use (EC 1907/2006) entered into force on 1 June 2007. The regulation aims to improve the protection of human health and the environment through the better and earlier identification of the intrinsic properties of chemical substances, giving greater responsibility to industry to manage the risks from chemicals and to provide safety information on the substances. REACH is limited to high volume chemicals. The European Chemicals Agency, which is the central point in the REACH system was established in 2007 and started functioning in June 2008. The Malta Standards Authority is the national authority responsible for reporting to REACH.

In July 2006, the European Commission adopted a thematic strategy for the sustainable use of pesticides to address the threats posed by their use to human health and the environment.

The International Health Regulations (2005), which came into force in June 2007 provide a legal framework for the coordination of the management of events that may constitute a public health emergency of international concern, and will improve the capacity of all countries to detect, assess, notify and respond to public health threats including chemicals.

Where scientific information is insufficient, inconclusive, or uncertain and where there are indications that the possible effects on humans and the environment may be potentially dangerous and inconsistent with the level of protection, the precautionary approach is to be applied, as set out in Principle 15 of the Rio Declaration on Environment and Development and in the EU Amsterdam Treaty, while aiming to achieve that chemicals are used and produced in ways that lead to the minimization of significant adverse effects on human health and the environment. The same recommendations regarding the precautionary principle are also applicable in the case of nanotechnologies and the manufacture of nanomaterials, where scientific evidence regarding potential negative health and environmental effects is controversial and limited.