Proposal for minimum environmental standards in the scrap metal industry

Consultation paper

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Environment Protection Authority

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Environment Protection Authority
59 Goulburn Street, Sydney NSW 2000
PO Box A290, Sydney South NSW 1232
Phone: +61 2 9995 5000 (switchboard)
Phone: 131 555 (NSW only – environment information and publications requests)
Fax: +61 2 9995 5999
TTY users: phone 133 677, then ask for 131 555
Speak and listen users: phone 1300 555 727, then ask for 131 555
Email: info@environment.nsw.gov.au
Website: www.epa.nsw.gov.au

Report pollution and environmental incidents
Environment Line: 131 555 (NSW only) or info@environment.nsw.gov.au
See also www.epa.nsw.gov.au

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Proposal

The Environment Protection Authority (EPA) is seeking feedback on proposed minimum environmental standards for scrap metal facilities, which would be legislated and be applicable across the industry. This consultation paper outlines this proposal.

In New South Wales, the scrap metal industry is diverse, ranging from small car wrecking yards to larger processing facilities. The industry plays an important resource recovery and waste management role in New South Wales.

There are many businesses in the NSW scrap metal industry.[1] Most are regulated by local councils, while only a few require an environment protection licence issued by the EPA. Increasingly, some of these businesses have come to the attention of regulatory agencies, which have observed poor environmental controls at several facilities. Inadequate management practices can lead to soil and groundwater contamination, water, noise and air pollution, and a greatly increased risk of fires. A volatile economic market for scrap metal, including lower prices, may lead to further decreases in environmental standards.

The EPA is concerned about the impact the above practices could have on the health of our environment, communities and businesses (see the Appendix). This consultation paper seeks feedback on a proposed regulatory scheme that would introduce minimum environmental standards across the scrap metal industry.

Under this proposal, scrap metal facilities that do not currently require a licence from the EPA will not be required to obtain one, but would need to comply with the proposed standards.

Scrap metal facilities that are licensed by the EPA will need to comply with these standards in addition to their licence conditions. If licence conditions are different, the stricter standard or condition applies.

Potential environmental and human health impacts

While some operators in the industry have a good record of environmental performance, there are recurring site-management issues common to scrap metal facilities that are not managed responsibly. These environmental concerns are greatest where end-of-life vehicles and/or 'white goods'[2] are received, as opposed to sites that receive scrap metal that has already been processed, sorted and drained of any liquids. However, some common issues across the industry have been observed:

- poor management practices for storage and handling of oils, grease, fuel, solvent, batteries and degreasers, particularly at small auto dismantlers. This means the presence of hydrocarbons, metals, heavy metals and polychlorinated biphenyls (PCBs) could result in soil and groundwater contamination, as well as water pollution
- inadequate draining of fuel, oil and other liquids from end-of-life vehicles
- a lack of hardstands[3], covered areas, and appropriate stormwater infrastructure to prevent fuel, oil and grease and other potentially contaminating materials from coming into contact with soil and waters
- the storage of too many waste tyres (which are a fire risk and are the perfect environment for mosquitoes to breed)

[1] NSW EPA, NSW Police and industry sources
[2] White goods: electrical appliances, such as fridges and washing machines.
[3] Hardstand: often a concrete (or similar material) covering the ground of a facility or area.

- air pollution and odour issues, including dust, fumes and particulates from burning, as well as hydrocarbon odours from processing activities
- noise and vibration, including high-impact and high-intensity noise and vibration generating activities (with occasional explosions)
- fire risk due to the equipment being used (such as oxy cutters) and the presence of combustibles (such as fuel); this is especially relevant where the yard is poorly laid out, there is too much scrap on the site, or there are inadequate distances between scrap stockpiles
- inadequate capture of liquid pollutants and clean-up procedures for spillages
- the packing of general waste, chemical containers, gas bottles, and waste tyres into end-of-life vehicles and metal waste, such as white goods, which results in increased shredder floc.[4]

Noise and air pollution may be particularly relevant at larger facilities where hammermills/shredders are being used. While most smaller facilities have been found to be using hand held tools for dismantling end-of-life vehicles, some use other equipment, such as oxy cutters and balers, adding to noise and air pollution, and an increased risk of fire.

Poor practices for the management of liquids, such as fuel, oils and grease (including draining fluid from end-of-life vehicles at small auto dismantlers), and a lack of appropriate covered areas, hardstands, stormwater and drainage controls are generally the major environmental risks on site. This can lead to the contamination of soil and water both on and off site. Chemical and oil storage on site and hot works (the use of equipment, such as oxy cutters) can also increase the risk of fires starting at these facilities. These environmental concerns can, in turn, have possible human health impacts on site workers and residents in neighbouring communities.

The systematic introduction of minimum environmental standards would create a level playing field for lawful business, and ensure that any environmental and human health risks are minimised.

Table 1: Common pollutants at scrap metal sites

Pollutant	Possible sources	Potential environmental impacts	Potential human health impacts
Total petroleum hydrocarbons and benzene, toluene, ethylbenzene and xylene (BTEX)	Fuel and oily parts from end-of-life vehicles that may leak or drain into soils or waters during storage or processing	• Soil contamination • Groundwater contamination • Poisoning of aquatic life • Limited oxygen in waterways	• Can affect the brain, central nervous system, immune system, liver, spleen, kidneys, developing foetuses and lungs • Benzene and other fuel components are classified as known human carcinogens (i.e. they increase the risk of developing cancer)
Particulate matter (PM)	Cutting and shredding activities	n/a[5]	Can be breathed in and cause lung cancer, respiratory problems and cardiovascular problems
Heavy metals	Contained in used and unused oils and attached to PM	Some heavy metals are toxic to aquatic life	• Some metals are carcinogenic • Lead can affect brain development in children

[4] Shredder floc: residual waste generated directly from the shredding of scrap metal.
[5] n/a – not applicable – the main direct effects of PM are on human health rather than the environment. Some environmental impacts may be seen due to other chemicals attached to the PM (e.g. metals, PAHs) if the PM settles on the ground or in a waterway

Pollutant	Possible sources	Potential environmental impacts	Potential human health impacts
Polycyclic aromatic hydrocarbons (PAHs)	Contained in used and unused oils and attached to PM	Some PAHs are toxic to aquatic life	Some PAHs are carcinogenic
Polychlorinated biphenyls (PCBs)	May be contained in oils from older cars and equipment	• Do not readily breakdown in the environment • Can accumulate in the fatty tissues of animals • May effect growth and reproduction • Toxic to aquatic life	• Carcinogenic • Can cause skin conditions, irritation of the nose/lungs, gastrointestinal discomfort, changes in the blood and liver, depression and fatigue • May cause reduced immune system function and behavioural changes, and impair reproduction
Ozone depleting substances	White goods	• Depletion of the ozone layer • Increased effect on climate change • Increased UV radiation	Can increase the potential for skin and eye conditions
Ethylene glycol	Engine coolants	It is toxic to aquatic life	Can damage the kidney, nervous system and heart if large amounts are consumed

Existing legal controls

The EPA is the appropriate regulatory authority (ARA) for the activities specified in Schedule 1 of the *Protection of the Environment Operations Act 1997* (POEO Act). These are known as 'scheduled activities'. In most cases, local councils are the regulatory authorities for non-scheduled activities. The EPA currently licences scrap metal facilities that receive over 30,000 tonnes per annum of scrap metal for processing.

New South Wales environment protection legislation[6] applies to the scrap metal industry. Therefore, facilities in the industry need to comply with a range of regulatory controls, or they could be considered in breach of the law. For example, there are general offences for pollution of land, water and air. Operators or persons undertaking activities at scrap metal facilities can be held in breach of these offences in certain circumstances.

The EPA can use several tools to achieve environmental compliance including:

- formal warnings
- official cautions
- penalty notices
- licence conditions
- clean-up and prevention notices and directions
- mandatory audits
- enforceable undertakings
- legally binding pollution reduction programs, and
- prosecutions.

Local councils also have regulatory tools under environment protection and planning legislation.

[6] *Protection of the Environment Operations Act 1997*, Protection of the Environment Operations (Waste) Regulation 2014, Protection of the Environment Operations (General) Regulation 2009.

Appropriate on-site environmental management techniques set by legislated minimum standards can help avoid any potential harm to the environment and human health from the operation of scrap metal facilities.

There is a national and international move to focus on the prevention of environmental issues within the scrap metal industry. In the European Union, this has led to an End of Life Vehicle Directive[7]. This includes measures to 'de-pollute' vehicles prior to any processing and dismantling, which are now incorporated into legislation in the United Kingdom.[8]

Why is a policy change proposed?

There is growing evidence of risks to the environment and human health due to the current practices of some businesses in the scrap metal industry. We can make the existing regulatory framework stronger by providing more tools to effectively regulate this industry and reduce any environmental and human health risks. Therefore, the EPA is proposing to introduce minimum environmental standards for scrap metal facilities into environment protection legislation.

Minimum standards can reduce the need to react to breaches of regulations (e.g. by issuing fines, and clean-up notices), by placing more emphasis on preventing environmental harm in the first place. This approach should not cause an increase in regulatory duties for local councils.

Improved environmental management practices at scrap metal facilities will help create a level playing field within the industry. It will also help by removing any unfair advantage caused by illegal activities and poor environmental practices. Business owners will be given a clear direction and guidance on the expected minimum standards.

The EPA will provide support during the introduction of any policy change. A reasonable 'grace' period will be given to industry so it can make any regulatory changes.

The EPA is seeking comment on the following:

1. Are the standards proposed below appropriate? If not, why not?
2. What would be considered a reasonable implementation period for industry to adopt the proposed minimum environmental standards?

Minimum environmental standards

This proposal applies to any site that stores, stockpiles, collects, dismantles, or processes scrap metal from end-of-life vehicles, white goods or other sources.

The standards would be included in the NSW environment protection legislation, with local councils remaining as the ARA for unlicensed facilities.

The proposed minimum standards are outlined below.

1. Storage and dismantling of end-of-life vehicles, white goods and other scrap metal

All end-of-life vehicles, white goods, and other scrap metal must be stored and dismantled/processed on hardstands under-covered areas with appropriate drainage infrastructure.

[7] *European Union, Directive* 2000/53/EC.
[8] The End-of-Life Vehicles Regulations 2003; The End-of-Life Vehicles (Producer Responsibility) Regulations 2005; The End-of-Life Vehicles (Amendment) Regulations 2010; The End-of-Life Vehicles (Producer Responsibility) (Amendment) Regulations 2010.

Ensure that end-of-life vehicles and white goods are not stored on porous surfaces[9] or near drains, as this could enable harmful liquids to reach soil and waters.

Ensure work areas drain inward to a collection system and not to stormwater and other areas of the site.

Ensure scrap metal is always placed on hardstands made of a resistant and waterproof material, such as concrete, during storage and processing. This will help retain any liquids and avoid spillages.

Ensure storage of scrap metal on site is orderly and in manageably sized stockpiles with adequate distances between stockpiles so that stockpiles are always accessible.

Are these proposed standards appropriate?

2. Clean and dirty water systems

Clean and dirty water systems and areas must be separated (including bunding to separate them), and all dirty water is to be contained and treated on site.

Appropriate drainage must be in place on site to collect surface water run-off, with separation of clean and dirty areas of the site with bunding.

Run-off from dirty areas (wastewater) can only be discharged to a sewer if a facility has a permit from the appropriate water authority (trade waste agreement). Otherwise, it must be collected and disposed of at a lawful facility.

Stormwater entry points must be clearly marked so they can be easily identified.

Businesses need to be aware of licence thresholds for liquid waste storage, including storage of hazardous waste to ensure they are compliant with environment protection legislation.

Are these proposed standards appropriate?

3. Liquid and chemical controls

Liquids, spills and chemicals must be handled, stored and disposed of appropriately.

Fuel and other liquids must be drained prior to any processing or storage of end-of-life vehicles. Liquids that are removed must be stored on covered and suitably bunded hardstand areas.

Handling practices for fluids and chemicals must be sufficient to contain and safely store and dispose of all liquids. This must include an easily accessible spill kit always being available at the facility.

Facilities must have a documented procedure kept on site outlining how spills will be prevented and what to do in the event of a spill. This procedure must be reviewed annually.

All liquid waste collected must be sent to a facility that is lawfully able to receive liquid waste[10], and records of disposal must be kept.

Are these proposed standards appropriate?

[9] Surfaces that allow liquid to seep through.

[10] Liquid waste is all waste not capable of being picked up by a spade or shovel. The full definition of liquid waste is provided in Schedule 1 of the *Protection of the Environment Operations Act 1997*.

4. Battery handling and storage areas

Battery handling and storage areas are to be bunded, covered and on a hardstand.

To prevent contamination of soil and waters, battery storage areas must be on a hardstand in a bunded, and covered area. Stored quantities should not exceed amounts authorised by the appropriate planning consent and/or environment protection licence, if applicable.

Batteries must be disposed of at a lawful facility – that is, a facility that has the appropriate development and environmental approvals to receive hazardous waste.

Are these proposed standards appropriate?

5. End-of-life vehicles, white goods, and other scrap metal to be free of other waste

End-of-life vehicles, white goods, and other scrap metal sent to a hammermill and/or shredder or for other processing either on site or off site must be free of other waste (including waste tyres).

To prevent unnecessary contamination and an increase in shredder floc, end-of-life vehicles, white goods, and other scrap metal sent to a hammermill and/or shredder or for other processing either on site or off site must be free of other waste, that is, those wastes that are not part of the original vehicle or appliance.

Ozone depleting substances in refrigerators and conditioners should be recovered and disposed of in accordance with Australia's international commitment to the Montreal Protocol on Substances that Deplete the Ozone Layer.[11]

Capacitors in fluorescent lights, which may contain PCBs, must be placed in a polyethylene bag which should then be put in a sealable metal container. Once contained, the capacitor must be transported by an appropriately licensed transporter for disposal at a facility lawfully able to receive this waste.[12]

Are these proposed standards appropriate?

6. No burning of waste

Mattresses or any other waste that contains metals must not be burnt to make metal more readily accessible. All other types of waste must not be burnt.

7. Noise vibration and controls

Transporting, tipping, handling, processing and storing scrap metal at facilities must be carried out in a controlled and competent manner so noise and vibrations are minimised.

Plant and equipment installed at the premises must be maintained and operated in a proper and efficient condition so that noise and vibrations are minimised.

Facilities must have a documented procedure outlining how noise and vibrations will be avoided or minimised. This procedure must be updated when facility operations change, such as when new plant and equipment is introduced. This procedure must be reviewed annually.

[11] Information on take-back programs for refrigerants is available in the Refrigerant Reclaim Australia (RRA) website at www.refrigerantreclaim.com.au

[12] Information on how to identify PCB-containing capacitors is available in the document *Identification of PCB-containing Capacitors – an information booklet for electricians and electrical contractors*, ANZECC 1997.

Facilities that process scrap metal must have a documented system of inspecting, and removing or rendering inert, gas cylinders, petrol tanks and other such potentially explosive items to minimise the likelihood of explosions in the facility. Also, they must record the date and time of any explosions and document the measures taken to reduce the likelihood of future explosions.

Are these proposed standards appropriate?

8. Construction of bunds

Before any work starts on the construction of bunds, facilities must consider whether the local authority needs to be consulted regarding necessary planning approvals.

Bunds must:

- have the following characteristics:
  - walls and floors constructed of impervious materials
  - sufficient capacity to contain 110% of the volume of the tank (or 110% volume of the largest tank where a group of tanks are installed)
  - floors graded to a collection sump
  - **no** drain valve incorporated in the bund structure, or
- be constructed and operated in a way that achieves the same environmental outcome.

Are these proposed standards appropriate?

Non-compliance with minimum environmental standards

Non-compliance with these standards may result in regulatory action, such as penalty notices (fines) and prosecutions.

Appendix: Environmental and human health impacts from primary contaminants found at scrap metal sites

Scrap metal facilities recycle a wide range of scrap metal products that can contain many potential contaminants that may be released into the environment. Released contaminants can end up in waterways, groundwater or air, and may have negative impacts on the environment and human health. The types of contaminants will vary depending on the activities conducted at a facility, as well as the type/origin of metal and the year of production.

The following sections highlight some of the main contaminants that might be found at these facilities and a summary of their possible impacts on the environment and human health.

What contaminants might come from a scrap metal facility?

Contaminants that might pollute waterways and groundwater

The list of contaminants from a scrap metal facility that might pollute waterways and groundwater will vary depending on the facility, but in general, the greatest concerns are from facilities that receive and process end-of-life vehicles. This is because of the wide range of contaminants that end-of-life vehicles contain.

The main concern is the possible contamination from oil (for example, petrol, diesel, and transmission fluid) that may be left on the ground at these facilities. These oils contain mainly petroleum compounds, including benzene, toluene, ethylbenzene and xylene (BTEX), but also other additives (5-20%) (Ramadass et al. 2015).

Other fluids used in car engines also have the potential to contaminate waterways and groundwater. For example, engine coolants that can contain a range of chemicals, including ethylene glycol, may be released into the environment if fluids from end-of-life vehicles are not handled correctly.

Some of the other chemicals that are commonly found in motor oils include polycyclic aromatic hydrocarbons (PAHs)[13] and metals, including, zinc, barium and lead (Ramadass et al. 2015). Used motor oils have a higher concentration of PAHs compared to unused oils as PAHs are formed through combustion processes.

The concentrations of metals in used oil also increases due to wear of the engine parts. Used motor oil is known to contain high concentrations of the metals zinc, barium and lead and lower concentrations of iron, copper, aluminium, chromium, manganese, nickel, tin, boron and molybdenum (ATSDR 1997).

Depending on the age of the end-of-life vehicle or other products being processed at a facility, the oils removed may also contain PCBs. Polychlorinated biphenyls were historically used in a range of equipment including transformers, generators and capacitors. They were phased out from the 1980s onwards because they are toxic and persistent in the environment, but may still be found in some older equipment and vehicles.

The dismantling of end-of-life vehicles can also result in acids being left on the ground. This is mainly from lead acid batteries, but can also be from various solvents and degreasers. These acids can change the chemistry of soil by lowering the pH (making it more acidic). This can affect the mobility of other chemicals and increase the likelihood that they might contaminate waterways or groundwater.

[13] Polycyclic aromatic hydrocarbons are a large group of organic chemicals containing carbon and hydrogen (hydrocarbons) that are mainly formed through incomplete combustion. Therefore, they can be found in combustion engines.

If these contaminants are left on the ground at scrap metal facilities, they can be transported into waterways or leach into groundwater if suitable controls are not in place. There are several ways this can happen. For example, during and following a rainfall event contamination on the ground at a scrap metal facility can:

1. move with the rainwater that runs off the site directly into a nearby waterway
2. move with the water into street gutters and then into storm water drains which release the water into creeks, rivers and the ocean
3. leach through the soil and into the groundwater below.

The contamination of waterways is mainly a concern for the environment, but human health can also be affected if the water is used for recreational or domestic purposes. Groundwater contamination mainly affects human health if there are groundwater bores near the contamination. Groundwater contamination can also enter waterways, as groundwater and surface water are often connected.

Contaminants that might pollute air

Depending on the activities conducted at a scrap metal facility, the potential for air contaminants to be released from the site will vary. A list of potential sources of air contaminants from scrap metal facilities include:

- shredders
- shearers
- crushers
- conveyors
- balers
- cutters (especially torch, such as gas and plasma arc)
- plant exhaust emissions (for example, diesel operating plant listed above).

These different activities may release different contaminants into the air. In addition to these activities, contaminated soil from unsealed areas can be blown off a site. The main concern is the small particles that can be released and are suspended in the air (also called particulate matter (PM)), which can travel long distances depending on their size and the wind speed and direction.

Particulate matter can be a concern on its own, but the different chemicals that make up the particles or are attached to the particles can also have an impact. These chemicals are most likely to be metals that are often used in alloys and surface coatings. In a recent study, air samples collected from outside of five scrap metal facilities found concentrations of iron, manganese, copper, chromium, nickel, lead, cobalt cadmium and mercury that were above normal (background) concentrations (Raun et al. 2013). The particles from scrap metal facilities may also contain high concentrations of other chemicals that are present at the site (e.g. PAHs).

Air contamination is primarily a concern for human health as the contaminants can be breathed in.

What are the environmental and human health impacts of these contaminants?

Oils and petroleum hydrocarbons

If motor oil reaches a waterway, some of the soluble components may dissolve in the water but, generally, the oil will float on the surface of the water. This is because oil does not mix with water and is less dense than water. This can affect the look of the waterway but also have a negative effect on the environment. The oil can have a smothering effect on aquatic plants and animals and it can coat the gills of fish and affect the ability of the fish to take in oxygen from the water (ANZECC & ARMCANZ 2000; Bhattacharyya et al. 2003). At high

enough concentrations, oil on the surface of water may also affect aquatic birds by coating vital body parts.

Oil that is present in a waterway can also affect aquatic organisms by limiting oxygen that they need for survival. Oil on the water surface can block the transfer of oxygen from air into the water. Furthermore, in the environment, oil can be degraded or broken down by bacteria, a process which uses oxygen. This can limit the availability of oxygen for aquatic organisms (ANZECC & ARMCANZ 2000).

Human exposure to petroleum hydrocarbons can have a range of effects depending on the length of exposure, the types of chemical compounds and the concentrations. In general, petroleum hydrocarbons can negatively affect the central nervous system, immune system, liver, spleen, kidney, developing foetuses and lungs (ATSDR 1999).

Particulate matter

Particulate matter can travel long distances in the air and can remain in the air for days or weeks where it can be breathed in by people (WHO 2013). Particulate matter is commonly described in terms of its size; for example, PM_{10} refers to PM with a size less than 10 micrometres and $PM_{2.5}$ refers to PM with a size less the 2.5 micrometres. The smaller particles are normally the biggest concern for human health because they can be inhaled or breathed into the lungs. The health effects of inhaled PM are well documented and include:

- respiratory and cardiovascular problems, such as aggravation of asthma, respiratory symptoms and an increase in hospital admissions
- mortality (death) from cardiovascular and respiratory diseases and from lung cancer (WHO 2013).

People with pre-existing lung or heart disease are particularly at risk, as well as elderly people and children. For example, childhood exposure to PM can affect lung development, lung growth rate and lung function (WHO 2013).

Metals

Metals released from scrap metal facilities may affect both the environment and human health. When metals enter waterways they can attach to the sediment and settle to the bottom, dissolve into the water or attach to sediment that floats in the water. Due to this, there are many ways that aquatic organisms might be exposed to metals that enter waterways. The metals can move into the organism through the skin or through the gills of fish, or when they swallow sediment or eat smaller organisms that have already ingested the metals. Aquatic plants can also take the metals in through the roots or through the leaves.

The possible effects of metals on aquatic animals and plants varies with different metals but, generally, at high concentrations, they may cause animals and plants to die, and at lower concentrations, they may affect normal growth and reproduction (ANZECC & ARMCANZ 2000). Metals can also accumulate and increase in concentration within aquatic organisms through a process known as bioaccumulation. This can affect that organism directly or the animals or humans that might eat these organisms.

There are a range of possible human health risks associated with metals. For example, long-term exposure of children to lead can affect brain development resulting in reduced intelligence and behavioural changes. Several of the metals are also considered to be carcinogens, meaning that they increase the risk of developing cancer. These include, nickel, cadmium, chromium and cobalt (Raun et al. 2013).

Polycyclic aromatic hydrocarbons

There are possible risks to the environment and human health from PAHs. Polycyclic aromatic hydrocarbons have low water solubility and, therefore, when they enter a waterway, they are usually found attached to the sediment rather than dissolved in the water. Due to this, aquatic animals that live in the sediment are likely to be the most exposed

to PAHs released into a waterway. These chemicals are also moderately persistent and, therefore, may remain in the environment for an extended time.

Polycyclic aromatic hydrocarbons can be directly toxic to aquatic organisms, causing death as well as affecting growth and reproduction at lower concentrations (ANZECC & ARMCANZ 2000). Some studies have also shown that mixtures of PAHs can cause tumours in fish (Hawkins et al. 1990).

The main human health risk associated with PAHs is that some of them are classified as known, possible or probable carcinogens by the International Agency for Research on Cancer (IARC) and/or the United States Environmental Protection Agency (US EPA). This means that exposure to these PAH chemicals can increase the risk of developing cancer.

Benzene, toluene, ethylbenzene and xylene

Benzene, toluene, ethylbenzene and xylene are found in a wide range of petroleum products. They can evaporate quickly but they can also dissolve in water. Benzene, toluene, ethylbenzene and xylene have been shown to negatively affect aquatic organisms if present at high enough concentrations, but the main risk from these chemicals is to human health. All BTEX chemicals are readily absorbed by humans and long-term exposure can have a range of effects, for example, on the brain, immune system and nervous system. Benzene is also classed as a known human carcinogen by the IARC and the US EPA.

Polychlorinated biphenyls

As outlined above, PCBs were historically used in a wide range of equipment. Polychlorinated biphenyls do not break down easily and, therefore, they are very persistent in the environment. They can accumulate in animals and fish and negatively affect their health. Larger animals, fish or people can also eat the smaller animals and fish that have accumulated these chemicals.

Human exposure to PCBs can cause skin conditions, irritation of the nose and lungs, gastrointestinal discomfort, changes in the blood and liver, depression and fatigue (ASTDR 2000). Based on animal studies, PCBs have also been shown to reduce immune system function, cause behavioural changes and impair reproduction (ATSDR 2000). In addition, both the IARC and the US EPA have classified PCBs as probable carcinogens.

Ethylene glycol

Ethylene glycol is often found as a component of engine coolants. It mixes easily with water and, therefore, can enter surface water or groundwater with runoff or leachate. In the environment, it is likely to degrade rapidly. However, some field studies of areas near airports that use ethylene glycol have reported toxic signs consistent with ethylene glycol poisoning, fish kills and reduced biodiversity (WHO 2000). It should be noted, however, that these effects cannot definitively be ascribed to ethylene glycol. In contrast, short-term (acute) toxicity data shows that ethylene glycol is ‘practically non-toxic’ to aquatic organisms, as defined by the US EPA acute toxicity evaluation criteria (Staples et al. 2001). In humans, if ethylene glycol is consumed in large amounts it can damage the kidney, nervous system and heart. However, health is unlikely to be affected by consuming very small amounts (ATSDR 2010).

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