
9 Managing the impact of chemicals on the environment

Key points

- Chemicals have the potential to impact adversely on the environment during their manufacture, use and disposal. Governments have a role in intervening to ensure that the risks of adverse impacts are managed where that is effective and efficient.
- Governments have regulated to address the impact on the environment of a number of chemicals with known hazards. However, a large number of chemicals in use have not been subject to environmental (or other) hazard and risk assessment.
- There are some differences in the way that each state and territory regulates for environmental protection, including with respect to chemicals and plastics. This can reflect the different environments across jurisdictions and the manner in which different regulatory regimes have evolved.
- The regulatory framework for managing the impact of chemicals on the environment could be improved. Reforms are being progressed under a national chemicals environmental management (NChEM) framework to improve effectiveness, efficiency and national consistency.
- Under the current arrangements, there is no institutional mechanism to coordinate the implementation of the National Industrial Chemical Notification and Assessment Scheme's (NICNAS's) environmental recommendations by the states and territories. A new environmental standard-setting body should be established that would consider NICNAS's recommendations on the environment and set nationally consistent standards as necessary. The states and territories should uniformly adopt the standards by reference.
- Environmental labelling should be considered by the Environment Protection and Heritage Council, based on cost-benefit analysis. Any environmental labelling scheme should be aligned with that of Australia's major trading partners and incorporated into the workplace labelling scheme.
- A performance management framework should be established to identify the data that are needed to evaluate outcomes against environmental objectives. Any additional data collection should be targeted at filling gaps in the existing data collection systems and informing outcomes, and only collected where cost effective.

Chemicals play a beneficial and important role in the economy, but some have the potential to harm the environment. There are numerous chemicals present in the environment as a result of human activity. Chemicals can reach the environment through a number of pathways, including intentional application (for example, application of pesticides), unintentional byproduct (for example, from industrial processes), domestic activity (for example, from application of cosmetics) or waste disposal (for example, chemicals contained in electronic equipment that is released into landfill). The main concerns about chemicals in the environment are ‘their persistence and their possible toxicity’ (Rae 2006, p. 1).

Significant work has been undertaken to develop a framework to improve the regulation of the impact of chemicals on the environment in the last five years. As discussed in chapter 1, the Environment Protection and Heritage Council (EPHC) has undertaken a number of initiatives to improve the environmental management of chemicals in Australia. This has included establishing a National Chemicals Taskforce in 2002 to scope issues associated with, and the need for, a national approach to ecologically sustainable chemical management and regulation in Australia. The proposed framework for national chemicals environmental management (NChEM) is discussed in section 9.4.

9.1 The case for regulating for the environment

The rationale for regulation is discussed in chapter 2. If a source of market failure exists in relation to the environment, government intervention may be warranted if the benefits of intervention materially outweigh the costs. Some market failures that occur in relation to chemicals and the environment include:

- negative externalities from use. Pesticides come under particular regulatory attention because they are designed to control target species of plants and insects. But the use of pesticides can result in the destruction of beneficial species, air pollution, land contamination, and chemical residues in surface water and groundwater.
- negative externalities from the discharge of chemicals and waste disposal. This may occur, for example, with an industrial plant discharging chemical byproduct into a river, which imposes a cost on downstream water users. Similarly, inappropriate waste disposal can cause water and soil contamination. The costs of damage to the environment are often borne by the community, including through the loss of amenity and the funding of rehabilitation.
- information failures. Market failures can arise if consumers are unable to make fully informed decisions about the safe use and disposal of a chemical. Information about the impact of chemicals on the environment is technically

complex and costly to provide, and is likely to be underprovided by the market. If chemicals producers and suppliers do not obtain information on a chemical's impact on the environment, and do not provide adequate information to help consumers safely use and dispose of a chemical, governments may have a role in requiring that this information be provided (box 2.1).

There are numerous examples of negative externalities from waste disposal and chemical use that have caused environmental damage (box 9.1). Many of these are legacies from a time when environmental controls were less stringent.

Box 9.1 Examples of legacies caused by chemical contamination of the environment

A paper prepared for the 2006 Australian State of the Environment Committee identified a number of examples of the presence of chemicals in the environment.

... concentrations of dioxins, furans and dioxin-like polychlorinated biphenyls (PCBs) derived from limited sampling of agricultural commodities, human blood and breast milk, soils, sediments, air and fauna. The levels were generally low by international standards. The environmental risk assessment was hampered by lack of toxicological data for Australian animals, but concluded that only marine mammals living near industrial areas and some raptors were at risk ...

PCBs have been detected in biosolids and in the fat of fish and marine mammals as a result of leakage of these substances from electrical equipment ...

The presence of persistent organic pollutants such as aldrin, dieldrin, and dichloro-diphenyl-trichloroethane (DDT) can still be detected at contaminated sites, in sewage biosolids, and in the fat of fish and marine mammals even though the use of these chemicals was phased-out over a decade ago ...

A major stockpile of hexachlorobenzene remains at Botany, New South Wales, and there is significant contamination of groundwater in the area from other chemicals ...

There are legacy issues with persistent organic pollutants at Sydney's Homebush Bay, where remediation is progressing ...

The discharge of metals to the environment has left legacy issues. Where land is to be reused, remediation is required under state and territory legislation and large quantities of contaminated soil have been removed to secure landfills ...

In rural areas of New South Wales and Queensland, a large number of cattle dip sites contaminated with arsenic and slowly-degrading DDT are under management ...

Lead and zinc from smelting operations and mercury from electrolytic production of chlorine contaminate the sediments in the Derwent estuary near Hobart ...

The discovery in 2006 that biota in Sydney Harbour contained significant levels of dioxins, and that people consuming much seafood were thereby affected, emphasises the need for careful monitoring around hotspots ...

At a number of inland sites, mercury contamination from former gold mining operations can be detected in local streams and, courtesy of biomethylation, in their biota ...

Source: Rae (2006, pp. 1-3).

9.2 Overview of regulatory arrangements

Under the Australian Constitution, the Commonwealth has limited power to regulate for the environment. Day to day environmental regulation is mostly undertaken by the states and territories, with some roles carried out by local government. There is a range of coordinating mechanisms to link the various aspects of the regulatory regime, as well as a number of self-regulatory arrangements.

In the last three decades, environmental regulation has tightened significantly and many of the practices of the past that resulted in the types of legacies listed in box 9.1 would not be permitted today. Most of the current regulation of chemicals in the environment is undertaken through general environment protection (including waste disposal) regulation, administered primarily by the states and territories through their environment protection Acts and National Environment Protection Measures (NEPMs). Some self-regulation programs are also undertaken by the industry. The manufacture, use and disposal of chemicals is of particular interest to environmental regulators. Each state and territory also regulates to manage environmental legacies.

Some environmental regulations specifically address the market failures associated with chemicals, recognising that the generic arrangements will not always be sufficient to adequately protect the environment. These include:

- regulations requiring the assessment of environmental risks undertaken by the National Industrial Chemical Notification and Assessment Scheme (NICNAS) and the Australian Pesticides and Veterinary Medicines Authority (APVMA)
- regulations relating to chemicals that are internationally recognised as causing harm to the environment (box 9.2), including:
 - organochlorine pesticides (which include dichloro-diphenyl-trichloroethane (DDT) and Aldrin), dioxins and polychlorinated biphenyls (PCBs) subject to the Stockholm Convention on Persistent Organic Pollutants
 - organotin anti-fouling paint subject to the Convention on the Control of Harmful Anti-fouling Systems on Ships (the AFS Convention)
 - ozone depleting substances that are subject to the Montreal Protocol on Substances that Deplete the Ozone Layer
 - hazardous chemicals and pesticides that are subject to the Rotterdam Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade

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- Chemical Control Orders (CCOs)/Notifiable Chemical Orders (NCOs) in New South Wales and Victoria (used to implement international commitments and to address local issues)
 - environmental aspects of labelling and Material Safety Data Sheets (MSDS) information provision
 - some self-regulatory arrangements.

Policy development and oversight

Policy development and oversight for national environmental regulation is the responsibility of the EPHC, formerly the Australian and New Zealand Environment and Conservation Council (ANZECC), and as such is collectively developed by the jurisdictions.

Intergovernmental Agreement on the Environment

In 1992, the ANZECC¹ signed the Intergovernmental Agreement on the Environment (IGAE) (Australian Government 1992) that lists agreed general principles of environmental governance, including:

- clarification of the roles, responsibilities and interests of the three tiers of government in regulating the environment
- a requirement that regulatory measures should be cost effective
- acceptance of the precautionary principle, intergenerational equity, the importance of biological diversity and ecological integrity
- improved environmental valuation, pricing and incentive mechanisms, the polluter pays principle and prices based on full life-cycle costs.

The IGAE also included an agreement to establish the National Environment Protection Council (NEPC) with responsibility for setting NEPMs.

National Environment Protection Council

The *National Environment Protection Council Act 1994* establishes the NEPC and aims to protect air, water and soil from pollution through the creation of NEPMs. NEPMs outline agreed national objectives for protecting or managing aspects of the environment and may consist of a combination of goals, standards, protocols, and guidelines. Each state and territory has its own mirror National Environment

¹ The Australian Local Government Association was also a signatory.

Protection Council Act to enable the provisions in the Commonwealth Act to be enforced at the state and territory level. The implementation of NEPMs is the responsibility of each jurisdiction. Particular NEPMs that relate to the environmental regulation of chemicals and plastics include:

- ambient air quality
- the national pollutant inventory
- general guidelines for the assessment of site contamination
- movement of controlled wastes
- used packaging materials
- diesel vehicle emissions
- air toxics (EPHC 2006a).

Chemical assessment

Both NICNAS and the APVMA assess chemicals for their impact on the environment.

NICNAS's assessment of environmental impacts

As part of the assessment process of a new or existing industrial chemical, NICNAS considers the environmental risk of a chemical over its life cycle and makes recommendations to safeguard the environment. To enable NICNAS to assess the environmental risk of a new chemical, the company or person importing or manufacturing the chemical is required to provide NICNAS with information on the chemical including its manufacturing process, proposed uses, physico-chemical properties, toxicological data (including ecotoxicological data for at least three aquatic organisms), exposure information, degradation and bioaccumulation information, transport, storage and disposal procedures. The proposed MSDS (including any information on handling and storage, accidental release, ecological impact and disposal) and the proposed label are also required (DOHA 2004b).

Environment assessments are conducted by the Department of Environment, Water, Heritage and the Arts (DEWHA) and provided to NICNAS under a service agreement. DEWHA makes an assessment of the potential environmental hazard of a chemical using data on chemical release patterns and the environmental effect the chemical would have. Each possible route for release of a chemical into the environment (for example, air, soil and water) during all stages of the life cycle (for example, manufacture, use and disposal) is considered. When considering potential

Box 9.2 International treaties and chemical regulation

The Stockholm Convention on Persistent Organic Pollutants

Dioxins are released into the environment mainly as unintended by-products of combustion processes. Australia fulfils its obligations under the Stockholm Convention through the National Action Plan for Addressing Dioxins in Australia (NAP), which adopts international limits on dioxin emissions and promotes adoption of international best practices to manage dioxins. The NAP will be implemented in consultation with other ministerial councils with an interest in dioxins.

Polychlorinated Biphenyls (PCBs) were once produced for use in electrical appliances, and are now released into the environment as byproducts of chemical manufacturing, incineration and waste disposal. The National PCB Management Plan was adopted in 1999 and meets Australia's obligations under the Stockholm Convention. The plan was incorporated into state and territory regulation in a variety of ways.

The Convention on the Control of Harmful Anti-fouling Systems on Ships

Organotin was once widely used in anti-fouling paint applied to ship hulls to control the growth of algae and other fouling organisms. In 2007, Australia became a party to the Convention on the Control of Harmful Anti-fouling Systems on Ships, which has been implemented in Australia by the *Protection of the Sea (Harmful Anti-fouling Systems) Act 2006*.

The Montreal Protocol on Substances that Deplete the Ozone Layer

Ozone depleting substances were widely used in Australia in refrigerators, air-conditioners, fire extinguishers and dry cleaning. The Commonwealth *Ozone Protection and Synthetic Greenhouse Gas Management Act 1989* and its regulations ensure Australia meets its obligations under the Montreal Protocol. Queensland, Western Australia, South Australia, Tasmania and the ACT regulate ozone through their generic environmental regulation. Victoria uses its Industrial Waste Management Policy. New South Wales has a specific Act dealing with ozone protection. New regulations developed under a 2003 amendment to the Commonwealth Act are replacing current state and territory ozone protection legislation. A number of states and territories have indicated that they intend to repeal their regulations to ensure there is no confusion.

The Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade

Australia became a party to the Rotterdam Convention on 18 August 2004. It requires companies that want to export certain hazardous industrial chemicals and pesticides to obtain written permission from a relevant government agency (the National Industrial Chemical Notification and Assessment Scheme and the Department of Agriculture, Fisheries and Forestry in Australia).

Source: DEH (2004); DEWHA (2007, 2008); DITRDLG (2007); EPA NSW (2007); EPA Victoria (2006); EPHC (2002, 2005); NABSW/SWMG (2001).

environmental impacts, parameters including volatility, solubility, mobility and the potential for biodegradation and bioaccumulation are evaluated (DOHA 2004b).

NICNAS can make recommendations to safeguard the environment in relation to importation, manufacture, handling, storage, use, emission limits or disposal of a chemical. Like its other recommendations, implementation of NICNAS's recommendations on the environment are not mandatory and are adopted by state and territory environment protection agencies and industry at their discretion. A Memorandum of Understanding (MOU) between the Commonwealth, state and territory governments — under which the jurisdictions undertook to implement NICNAS's recommendations wherever possible and to advise the director of NICNAS of any consequential actions they took — has largely been ineffective with respect to environmental recommendations. While a MOU working group was established to facilitate these links, it has largely functioned as a forum for discussing workplace safety issues.

APVMA's assessment of environmental impacts

As part of a wider assessment and registration process for agricultural and veterinary (agvet) chemicals, the APVMA evaluates the environmental safety of chemicals and products over their life cycle before they can be registered. It also undertakes risk management functions by approving the product label and setting out conditions of use to ensure the safety of the environment (APVMA 2004b).

To enable assessment of a chemical's potential environmental impact, information on the chemical's structure and manufacture, toxicology, metabolism and toxicokinetics, potential for environmental exposure, physicochemical and biodegradation, bioaccumulation in aquatic organisms, mobility in soil and ecotoxicological studies on birds, mammals, non-target invertebrates and native vegetation must be provided to the APVMA. Environment assessments are conducted by DEWHA under a service agreement. DEWHA considers potential hazards and likely exposure, and recommends risk management strategies (sub. DR105). An example of the proposed label must also be provided to the APVMA for approval (APVMA 2004b).

Administration and enforcement

State and territory environment protection regulation

Each state and territory has legislation protecting the environment from pollution that requires licensing or authorisation of activities of environmental significance,

outlines offences, and sets penalties for breaches of licensing conditions and environmental harm.²

Waste management issues, including disposal of hazardous chemicals and the products that contain them, have been included in the environmental regulation of most jurisdictions. In some jurisdictions, a separate Act has been created to specifically deal with waste management and resource recovery issues. Most states and territories also have legislation controlling the development of new industries and changes to land use, with impacts on the environment taken into consideration. While these Acts do not deal with chemicals issues directly, they play an important role in assessing and placing conditions on industrial development in Australia and have a role in controlling chemicals.

Contaminated sites, including contamination from chemicals, are managed using a range of regulatory instruments that differ across jurisdictions. New South Wales and Western Australia have specific legislation targeted at contaminated sites, Victoria and the ACT use a State Environment Protection Policy, and Queensland has issued guidelines on how to deal with contaminated sites. Other states and territories use their waste management legislation. In addition, a NEPM to improve national consistency in the assessment of contaminated sites is in effect.

All of these regulations deal mainly with the use of chemicals, focusing on discharges and emissions. Misuse of chemicals or inappropriate storage of chemicals that leads to environmental harm can also be covered under these Acts. Most states and territories also have provisions for the creation of environment policies and codes of practice under their environment Acts.

Pesticide use

In addition to APVMA conditions, which are imposed at the assessment and registration phase, the states and territories regulate the impact of pesticide use on the environment beyond the point of retail sale. This is done through training requirements for users, licensing commercial pest control operators and ground and aerial spraying operators, residue monitoring and enforcement of the safe use of chemicals.

² In Victoria, Queensland, Western Australia, South Australia and the ACT, this legislation is known as the Environment Protection Act. New South Wales has the *Protection of the Environment Operations Act 1997*, Tasmania has the *Environmental Management and Pollution Control Act 1994* and the Northern Territory has the *Waste Management and Pollution Control Act 1998*.

Local government

The roles and responsibilities of local government in relation to chemicals and plastics regulation vary from state to state. Local government functions that relate to environmental aspects of chemical regulation include:

- waste collection and management
- planning and development approval
- water and sewerage services in some states.

Local government can also develop, enforce and monitor laws and regulations governing public health, building, and environmental management, in order to promote good health, hygiene and environmental practices. Some local governments monitor and control water and air pollution, and collect water samples for chemical and microbiological analysis to ensure it complies with standards. Local government may also receive reports of adverse chemical impacts such as spray drift, and report this information to the APVMA. They may also work with the chemical industry and the EPHC on self-regulatory programs such as the drumMUSTER and ChemClear programs, and provide information on safe handling and disposal of chemicals and incident reporting.

Environmental information provision

Some protection of the environment from the harmful effects of chemicals is achieved through occupational health and safety (OHS) regulations, which impose obligations on employers to provide information on chemical hazards through the provision of labels and MSDS (chapter 6). Labels and MSDS are prepared under the hazardous substances and dangerous goods regulatory framework. Under the framework, a chemical can be classified as a dangerous good on the basis of, among other things, hazards that may affect the environment (NOHSC 2001a). Labels and MSDS, while primarily focused on protecting workers' health and safety, may contain some information about how to manage a particular chemical's impact on the environment.³

³ The objective of the National Model Regulations for the Control of Workplace Hazardous Substances is to protect workers from adverse health effects. The Approved Criteria for Classifying Hazardous Substances provides mandatory criteria for determining health hazards, and optional criteria for determining environmental hazards. The National Code of Practice for the Preparation of Material Safety Data Sheets recommends that environmental information be included on MSDS, but its inclusion is not enforceable.

Labels

Under Commonwealth, state and territory OHS regulations, workplace hazardous substances (substances that present a hazard to people's health) must be labelled in accordance with the National Code of Practice for the Labelling of Workplace Substances (NOHSC 1994b). The Code makes no direct reference to environment specific labelling requirements for hazardous substances. However, labels must include instructions on emergency procedures including the control of leaks, spills and fires. Labels must also refer users to MSDS which may contain environmental information.

Dangerous goods (goods that present hazards such as flammability or explosiveness) for transport or use in the workplace are labelled in accordance with the Australian Code for the Transport of Dangerous Goods by Road or Rail (the ADG Code). The ADG Code includes provisions for the labelling of goods that are hazardous to the aquatic environment (NTC 2007).

The Australian Safety and Compensation Council (ASCC) is in the process of revising the national standards and codes of practice for workplace chemicals (unifying regulation of workplace hazardous substances and dangerous goods). The ASCC has published a Draft National Standard for the Control of Workplace Hazardous Chemicals (ASCC 2006e) and a Draft National Code of Practice for the Labelling of Workplace Hazardous Chemicals (ASCC 2006c). This draft Code contains the proposed labelling provisions for workplace hazardous substances and dangerous goods in the one document.

The draft National Standard and Code are based on the UN Globally Harmonised System of Classification and Labelling of Chemicals (GHS) which includes environmental labelling provisions. The GHS has classification and labelling provisions for chemicals that are hazardous to the aquatic environment (table 9.2). However, under the draft National Standard, it would not be mandatory to classify a substance as hazardous to the aquatic environment, and even where this classification has been determined, it would not be mandatory to include the hazard warning. The draft Code provides guidance on the voluntarily inclusion of information on environmental hazards on labels.

This information may be mandatory in other countries that adopt the GHS environmental labelling provision, and may need to be added to labels on Australian exports to comply with foreign labelling requirements. Some labels on imports into Australia may therefore carry the environmental information. NICNAS has been including the information needed to meet the GHS environmental labelling provisions in new and priority existing chemical assessment reports since its inception in 1990.

Labels provided to the APVMA for assessment must meet the requirements outlined in the APVMA Manual of Requirements and Guidelines (APVMA 2004b). The APVMA requires labels to include: any limits on use, and other limitations and prohibitions to minimise impacts on the environment; protection statements⁴ to prevent harm to other crops, native and other non-target plants, livestock (including bees), wildlife, fish, crustaceans and the environment generally; storage and disposal statements; a reference to the MSDS; and emergency information.

Material safety data sheets

Commonwealth, state and territory OHS regulation requires employers to make MSDS available to anyone likely to be exposed to hazardous substances or dangerous goods in workplaces. MSDS describe the chemical and physical properties of materials and provide advice on their safe handling and use. The National Code of Practice for the Preparation of Material Safety Data Sheets (NOHSC 2003) sets out the information that is recommended to be included on MSDS to minimise potential environmental harm (box 9.3).

As part of the ASCC's review of the national regulatory requirements for workplace chemicals, it has published a Draft National Code of Practice for the Preparation of Safety Data Sheets (ASCC 2006d). The draft Code is based on the GHS, and has a greater emphasis on environmental matters than the current national code of practice. For example, the draft Code recommends that the section of the safety data sheet that deals with transport should include information on whether the substance is environmentally hazardous. As with labelling, under the draft National Standard for the Control of Workplace Hazardous Chemicals, it will not be mandatory to classify a substance as hazardous to the aquatic environment nor to include ecological information or hazard communication elements that relate to aquatic toxicity on Safety Data Sheets (SDS). The draft SDS Code provides guidance on the voluntary inclusion of information on environmental hazards in SDS (ASCC 2006d).

⁴ Protection statements can include risk management statements such as 'do not spray across open bodies of water' or hazard statements such as 'dangerous to fish and other aquatic organisms' (APVMA 2004b).

Box 9.3 Environmental information on Material Safety Data Sheets

Workers who use hazardous substances or dangerous goods at work must be provided with a material safety data sheet (MSDS). There are mandatory criteria for classifying health hazards, and optional criteria for classifying environmental hazards.

The National Code of Practice for the Preparation of Material Safety Data Sheets recommends the following environmental information provisions be included.

- Accidental release measures detailing appropriate responses to spills, leaks, or releases such as keeping spills away from drains, surface water and groundwater, methods and materials for clean up.
- Handling and storage measures to minimise the release of the hazardous chemical to the environment.
- Ecological information – ecotoxicity, persistence and degradability, mobility in soil environmental fate and bioaccumulation potential. While the Code recommends this information be on MSDS, it is not a mandatory requirement under current Commonwealth, state and territory hazardous substances regulations. However, under dangerous goods regulation, some states and territories require information such as ecotoxicity, persistence and degradability.
- Disposal considerations for safe disposal, recycling or reclamation of the hazardous chemical and/or containers.
- Other regulatory information not provided elsewhere in the MSDS such as whether the chemical is subject to domestic environmental legislation.

The Draft National Code of Practice for the Preparation of Safety Data Sheets (SDS) contains environmental information provisions similar to the National Code of Practice for the Preparation of Material Safety Data Sheets. In addition, there are provisions for transport information, which include whether a hazardous substance is a known marine pollutant according to the International Maritime Dangerous Goods Code, and whether the substance is environmentally hazardous according to the UN Model Regulations.

However, the Draft National Standard for the Control of Workplace Hazardous Chemicals exempts substances from classification as hazardous to the aquatic environment, and ecological information provisions relating to these hazards would not be mandatory on SDS. If a hazardous chemical has been classified into a hazard class, the Standard recommends that this classification and available ecological information be included in the SDS.

Source: NOHSC (2003); ASCC (2006d, 2006e).

Self-regulation

There is a range of self-regulatory agreements in the chemicals and plastics industry covering labelling, storage, use, disposal and the recycling of chemicals and packaging. Many of these agreements aim to manage the impact of chemicals on the environment (table 9.1).

Table 9.1 Self-regulatory agreements

<i>Agreements</i>	<i>Partners</i>	<i>Main aims / activities</i>
ChemClear	CropLife Australia/Agsafe, National Farmers Federation (NFF), Veterinary Manufacturers and Distributors Association (VMDA), Animal Health Alliance (AHA), Australian Local Government Association (ALGA)	Collects and safely disposes of unwanted and deregistered agricultural and veterinary chemicals.
drumMUSTER	CropLife Australia/Agsafe, NFF, VMDA, AHA, ALGA	Collects and recycles used agricultural and veterinary chemical containers.
Code of Practice for the Management of Plastic Bags	Australian Retailers Association (ARA), Environment Protection and Heritage Council (EPHC)	Promotes reduced use and increased recycling of lightweight plastic bags.
National Packaging Covenant	Industry and industry associations, EPHC, state, territory and local governments, community groups	Aims to improve environmental performance and life-cycle management of consumer packaging and paper.
PVC Product Stewardship Commitment	Industry, Vinyl Council of Australia, Department of Environment, Water, Heritage and the Arts	Promotes measures to address the health and environmental concerns with PVC products.
Phosphorous Content and Labelling of Detergents Scheme	ACCORD Australasia	A voluntary standard for labelling detergents that contain 5 per cent phosphorus or less.

Source: ACCORD Australasia nd; ARA (2003); NPCC (2005); NSW DEC (2006); VCA (2002).

9.3 The effectiveness and efficiency of environmental protection regulation

Ways of assessing effectiveness and efficiency are outlined in chapter 2. Those that are most relevant to the environment include:

- monitoring the impact of chemicals on the environment by collecting performance data and adverse event reports to assess the effectiveness of regulations in achieving objectives

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- evaluating mechanisms to promote good governance and cross-jurisdictional coordination, and the degree to which these mechanisms achieve consistent, if not uniform, regulatory outcomes
 - examining the case for environmental labelling through cost–benefit analysis
 - considering whether there are more effective and efficient alternatives to regulation, such as financial assurances and self-regulation.

Monitoring the impact of chemicals on the environment

Assessing the effectiveness of environmental protection regulation in reducing the impact of chemicals on the environment is a difficult task. There are little data on environmental outcomes in Australia, let alone data specifically relating to the impact of chemicals. This was noted recently in State of Environment reporting:

It is still not possible to give a comprehensive national picture of the state of Australia's environment because of the lack of accurate, nationally consistent environmental data. Therefore, the need for an enduring environmental data system remains a high priority if Australia is to measure progress and make sound investments in the country's environmental assets. (DEH 2006, p. 2)

It is also difficult to assess effectiveness when there is no way of knowing what the outcomes would have been in the absence of regulation (although some of the examples of legacies of the past can give a reasonable indication).

Examples of the limited data that the Commission has identified that report on outcomes of regulated chemicals are presented in box 9.4. The evidence relates to specific chemicals that have well established histories of being environmental and human health hazards (and in some cases are the subject of international treaties), and to particular environments or regions. For the most part, the impact of these chemicals appears to be reducing over time. This view is supported by the Organisation for Economic Co-operation and Development (OECD) that found:

Although there are no consolidated data on emissions of known hazardous substances across OECD countries, it is probable that, overall, such releases from the chemicals industry in these countries are declining. (OECD 2001a, p. 226)

This view was generally consistent with comments made by participants to a roundtable on the environment conducted by the Commission in December 2007. Discussion at the roundtable indicated that generic environmental regulation has been broadly effective in managing the impact on the environment of chemicals with known hazards. However, there was concern about the possible impacts on the environment of the many chemicals that have not been assessed. As the OECD also noted:

The primary problem today is the lack of knowledge about the properties, effects and even exposure patterns of the great majority of chemicals (and, by extension, of preparations and consumer products made with them) on the market today. Whereas known hazardous chemicals are being managed to a large extent, there may be many unknown hazardous chemicals whose potential risks are neither being evaluated nor managed because the necessary information is not available. (OECD 2001a, p. 223)

Box 9.4 Examples of quantitative evidence of environmental outcomes relating to regulated chemicals and plastics

Ozone

It is estimated that global production and consumption of ozone depleting substances were reduced by 89 and 91 per cent respectively between 1986 and 2004. Australia has met or exceeded all of its phase out commitments under the Montreal Protocol. Observations and model calculations suggest that the global average amount of ozone depletion has now approximately stabilized and the ozone layer is expected to begin to recover in coming decades.

Dioxins

Dioxin levels in the environment (air, soil and water) are generally low compared with other countries. However, the concentrations in sediments at a few areas, and particularly in the lower Parramatta estuary and the western part of Port Jackson, are substantially elevated. Commercial fishing has been suspended in Sydney Harbour and Homebush Bay as a result of elevated levels of dioxins being detected in fish samples.

Organochlorine pesticide residues

There are data on the number of food samples where organochlorine pesticides were detected. In 2006-07, low level organochlorine residues were observed in a number of animal product samples but no results were above the relevant Australian Standards. No organochlorine residues were detected in sampled plant products.

Air quality

Since 1998 carbon monoxide has not exceeded the National Environment Protection Measure standard in any Australian city, most probably as a result of vehicle emission controls that were introduced in 1997.

In rural and regional Australia, levels of most pollutants are well below actual or proposed standards. Sulphur dioxide emissions and lead remain a concern in a few limited localities. The data from the National Pollutant Inventory indicates that benzene may be of concern in the Pilbara.

Source: DAFF (2007); DEH (2004, 2006); IPCC/TEAP (2005); UNEPOS (2005).

The difficulties in assessing the effectiveness and efficiency of environmental regulation in reducing the impact of chemicals on the environment highlight the importance of monitoring and information capture systems. In Australia, monitoring has been largely piecemeal and uncoordinated. In this respect the EPHC's National Chemicals Taskforce noted:

... better feedback loops and understanding of chemical impacts in the Australian environment would be required to make a more definitive statement about the efficacy of current chemical management frameworks in protecting the environment. (EPHCNCT 2003, p. 47)

While there are clearly some information gaps, there is also a concern that existing information is not being used optimally to support the assessment, control and monitoring of the environmental impacts of chemicals. A 1997 report to Environment Australia (Monitoring the Environmental Effects of Agricultural and Veterinary Chemicals in Australia – Preliminary Investigations) noted that state/territory programs were so disparate in nature and scale that collating the results would not be feasible ...

Options could be explored to facilitate more effective monitoring of environment and health impacts by ensuring optimal use of existing information; identifying gaps; and facilitating a nationally consistent approach by governments and industry. (EPHCNCT 2003, p. 43)

While monitoring often involves top down systems to collect data, it can also utilise bottom up feedback systems drawing on industry and public experiences, including through state and territory environment protection agencies and primary industry departments. For example, as noted in chapter 8, the agvet regime provides a feedback loop through APVMA's Adverse Experiences Reporting Program, which facilitates reporting of problems with the use of agvet products. One measure of effectiveness is the number and severity of reported adverse events or experiences (chapter 2). In 2005, of the 196 adverse experiences reports evaluated, assessed and classified by the APVMA, only four related to the environment (APVMA 2006) and in 2006, six out of 63 adverse experiences reports related to the environment (APVMA 2007c).

A more systematic attempt at monitoring effectiveness of agvet regulation is being implemented by the Product Safety and Integrity Committee (PSIC).⁵ It has taken steps to evaluate the effectiveness of the agvet framework by developing a performance management framework. Some of its objectives relate to the environment, including:

- unacceptable residues in potable water are avoided ...
- unacceptable residues in surface water, groundwater and raw water are avoided
- adverse environmental impact from off-target spray drift are avoided

⁵ A committee of officials providing advice to the Primary Industries Ministerial Council.

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- off-target wildlife and companion animal deaths are avoided. (sub. 39, p. 7)

The preliminary results suggest that the current agvet framework is reasonably effective in reducing risks of contamination of the environment by agvet chemicals, including pesticides, although one indicator identified a possible environmental concern relating to off-target spray drift:

An initial assessment by states/territories of their performance against the indicators established for each performance outcome suggests that there are three areas where performance may need to be improved - exported Australian produce meets the importing country MRLs [maximum residue limits]; off-target spray drift incidents on primary produce are avoided; and adverse, non-occupational, public health incidents from contact with pesticides are avoided. (sub. 39, pp. 7–8)

Coordination mechanisms to facilitate good governance and nationally uniform regulations

Effectiveness and efficiency can be influenced by the mechanisms put in place to coordinate regulatory processes. Introducing such mechanisms can be crucial where regulatory issues are national in scope but are addressed differently across the states and territories.

Many aspects of the environmental management of chemicals are national in scope. A national approach to risk management would be best where it:

- reduces costs to firms (especially those operating in more than one jurisdiction), governments (through reduced administration and increased access to expertise) and consumers (from lower prices of products)
- enables better control of externalities that transcend state borders (such as chemical pollution of the air and waterways)
- simplifies the implementation of international agreements (such as the Stockholm Convention on Persistent Organic Pollutants)
- encourages greater compliance with regulations, and greater support and understanding in the community.

On the other hand, while the states and territories regulate for environment protection in broadly similar ways and to achieve similar objectives, some differences have emerged. These may reflect the differing environments within jurisdictions, different ways in which the regulatory systems have evolved, different priorities or different community attitudes to risk. These differences mean that the costs of moving to more nationally consistent arrangements may not be trivial, and hence would need to confer even greater benefits over time. They also indicate that

national approaches will require a degree of flexibility in administration and enforcement to accommodate the needs of the jurisdictions.

Links between risk assessment and risk management

Currently there is no formal national framework for the environmental regulation of chemicals other than what exists through the National Registration Scheme for agvet chemicals, and even that differs beyond the point of retail sale in the way it is implemented and enforced across jurisdictions. On the industrial chemical side little exists. As noted earlier, an MOU between the Commonwealth and the states and territories was meant to facilitate the take up of NICNAS's recommendations but this has been largely ineffective with regard to environmental recommendations. In practice, it has been more oriented to workplace safety issues than the environment. Informal links between NICNAS and state and territory environment agencies have been developing, and there has been some consideration of using the MOU to establish a more formal environment regulation working group (EPHCCWG 2006).

The absence of formal mechanisms to coordinate hazard and risk assessment with environmental risk management by the jurisdictions has been noted for some time. For example, the National Chemicals Taskforce noted that:

There is no ... framework that clearly articulates the environmental issues to be considered in assessing and managing potential risks from exposures to industrial, therapeutic and food additive chemicals; and the kind of risk management outcomes that would be expected by regulators. This gap creates a cycle in which jurisdictions cannot respond rapidly and consistently to assessments, and assessments are not framed to facilitate a consistent response by jurisdictions. (EPHCNCT 2003, p. 34)

Many submissions to this study have also raised this issue.

Prior to the recent NChEM reforms (referred to in section 9.4), the absence of a national framework linking risk assessment with risk management for industrial chemicals was having two impacts on effectiveness and efficiency. First, assessments were not as effective as they could have been because NICNAS was not making sufficient use of links with its state and territory counterparts in the environment agencies. NICNAS did not consult with the states and territories on the scope or content of draft risk management recommendations and as a result they may not have adequately captured on-the-ground environmental issues. Recommendations tended to be impractical or impossible for the states and territories to implement (EPHC 2006b).

Second, the absence of a formal legislative link between NICNAS's recommendations and state and territory action was leading to inconsistent take up

of its recommendations, or recommendations not being taken up at all. There was also confusion over roles and responsibilities (EPHC 2006b).

In response to the Taskforce's concerns, a Working Group on the Environmental Risk Management of Chemicals (the EPHC Chemicals Working Group (CWG)) developed a framework for National Chemicals Environmental Management, known as NChEM.

Other national frameworks

As noted earlier in the chapter, strategies have been developed by the EPHC (and its predecessor) to manage the impact on the environment of specific chemicals and groups of chemicals on a case-by-case basis⁶, often in response to international treaties. These have met with mixed success. On the plus side, the agvet system provided an efficient way of banning organochlorine pesticides, which were subject to the Stockholm Convention. The ban was implemented by adding the pesticides in question to the Agvet Code Regulations, avoiding the need for each state and territory to use its own regulation. NEPMs have been used to introduce uniform national approaches to some specific issues, such as developing guidelines for assessing contaminated sites.

In other cases, responses have tended to be piecemeal and inconsistently implemented by the states and territories. Implementation of the National PCB Management Plan involved a range of approaches across jurisdictions. Some relied on existing environmental regulations, some made changes to waste regulations, while others incorporated the principles of the plan into their environmental licensing (NABSW/SWMMG 2001).

Coordination mechanisms will become more important in the future

Despite the relatively fragmented nature of the various regulatory arrangements governing chemical use in the environment, regulation appears to have been relatively effective at managing risks from known hazardous chemicals. But these arrangements are likely to come under increasing pressure as more and more chemicals are assessed for their environmental impacts. The National Chemicals Taskforce has noted that greater responsiveness and flexibility will be needed in the future to address emerging issues, particularly if chemicals assessments, and the

⁶ Such as the regulatory framework for ozone depleting chemicals, the national waste management strategy for organochlorine pesticides and the national strategy for the management of PCB materials in use and PCB wastes (EPHCNCT 2003, p. 34).

number of chemicals identified as of concern to the environment, increases (EPHCNCT 2003).

While the Commission has recommended elsewhere that the assessment of existing industrial chemicals be greatly accelerated (chapter 4), this information may need to be used to develop appropriate national standards. The Commission's views on the NChEM initiative and a national framework for the environmental management of chemicals are set out in section 9.4.

Environmental labelling

The release of chemicals into the environment can have detrimental impacts. Some protection of the environment is provided by existing generic environmental waste disposal regulation, and market and common law incentives facing chemical suppliers and users. Environmental labelling could have additional benefits if it led to behavioural changes in the use, transport, storage and disposal of chemicals that reduced their impact on the environment.

Under current arrangements, labels for industrial chemicals, used in both the workplace and in domestic situations, do not require information on environmental hazards, although the GHS provides a framework for environmental hazard classification and labelling (table 9.2). By comparison, agvet products may be labelled with instructions on how to manage the impact of the chemical on the environment and may include risk management instructions or hazard statements in relation to the environment.




Mandatory environmental hazard classification and labelling was considered for inclusion in the proposed system for workplace hazardous chemicals, but its implementation was not recommended (ASCC 2006f). The main barrier to its mandatory inclusion appears to be a perception that it would be difficult to enforce under OHS legislation (ASCC 2006h). For example, the WA Department of Consumer and Employment Protection indicated that its OHS Act is restricted to occupational safety and health issues, and it could not enforce environmental label or MSDS information (sub. DR114).

Most industrial chemicals in use in Australia have not been assessed for environmental impacts. Determining the environmental hazards of all chemicals and including this information on labels would be costly. However, this information is available where chemicals have been assessed.⁷ As labels need to be reviewed

⁷ DEWHA assesses toxicity to aquatic organisms and has done so since 1986 for agvet chemicals and 1990 for industrial chemicals. NICNAS is accelerating its review of existing chemicals. This will produce more information on the environmental hazards of chemicals.

following assessment and at least every five years, the additional costs of phasing in environmental hazard labelling could be expected to be reasonably low. Assessments from approved foreign schemes might also be used in classifying environmental hazards (section 4.2).

Table 9.2 **GHS environmental hazard classifications and labelling**

HAZARDOUS TO THE AQUATIC ENVIRONMENT – ACUTE HAZARD			
Category 1	Category 2	Category 3	
	No pictogram	No pictogram	
Warning Very toxic to aquatic life Avoid release to the environment Collect spillage Dispose of to...	No signal word Toxic to aquatic life Avoid release to the environment Dispose of to...	No signal word Harmful to aquatic life Avoid release to the environment Dispose of to...	
HAZARDOUS TO THE AQUATIC ENVIRONMENT – CHRONIC HAZARD			
Category 1	Category 2	Category 3	Category 4
		No pictogram	No pictogram
Warning Very toxic to aquatic life with long lasting effects Avoid release to the environment Collect spillage Dispose of to...	No signal word Toxic to aquatic life with long lasting effects Avoid release to the environment Collect spillage Dispose of to...	No signal word Harmful to aquatic life with long lasting effects Avoid release to the environment Collect spillage Dispose of to...	No signal word May have long lasting harmful effects to aquatic life Avoid release to the environment Dispose of to...

Source: ASCC (2006e).

Requiring labelling of only those chemicals that have been assessed could lead to a perverse outcome. Users may choose products containing unassessed chemicals that do not carry the environmental hazard warning on the label in the potentially mistaken belief that they were not hazardous to the environment. If substituted products contained chemicals that were equally or more hazardous, a worse outcome could eventuate. Thus, if a partial scheme was introduced, users might need to be educated on the meaning and scope of the new labelling arrangements.

The Commission considers that any new environmental labelling requirements for industrial chemicals would be best incorporated into the existing or proposed workplace labelling arrangements, in preference to creating a new scheme. This would simplify the requirements on firms in meeting their labelling obligations. However, it may require state and territory environment protection legislation to be amended to give legislative backing to inclusion of environment hazard classification and labelling in the workplace labelling scheme. Administrative arrangements could be put in place to ensure that the agency with the appropriate responsibilities and skills had carriage of environment issues in the relevant standard or code. This matter could be coordinated by the Standing Committee on Chemicals (section 3.4).

The incorporation of environmental labelling into the existing or proposed workplace labelling arrangements would not, however, address the labelling of products targeted at domestic or household consumption. Under current arrangements, hazardous substances targeted at domestic and household use do not have any labelling requirements, unless they are a cosmetic or a scheduled poison (appendix G). There are some market and common law incentives for manufacturers to provide instructions on safe use and disposal, and governments regulate what households are permitted to dispose of in municipal waste. Any decision to apply environmental labelling to products targeted at households should be based on a demonstrated improvement in environmental outcomes that offset the additional cost.

Any decisions on mandatory environmental labelling will hinge on the extent of the additional benefits to the environment arising from behavioural change, and the uses (for example, domestic or workplace) where behavioural changes are most likely to occur. Any environmental labelling requirements should not be implemented until there is certainty about the systems being implemented by our major trading partners to ensure that the trade facilitation benefits can be realised, and should not precede a decision on whether to adopt a workplace hazardous labelling system based on the GHS.

The Environment Protection and Heritage Council should examine the costs and benefits of mandatory environmental labelling of chemicals. Mandatory environmental labelling should only be introduced if there is a demonstrated net benefit to the community.

Other regulatory mechanisms

Financial assurances

Some participants to the study have suggested that greater use of financial assurances could improve the effectiveness and efficiency of environmental regulation. In most states and territories, environment protection legislation allows the relevant authority to require upfront financial assurances from operators. Financial assurances can improve the likelihood that the future costs of addressing an environmental legacy are borne by its operator, even if the operator becomes insolvent or leaves the country.

There are two potential applications for financial assurances in environmental regulation. For one, they can be used to cover liabilities that are certain to occur in the future, such as post-closure rehabilitation of mining or manufacturing sites. When used in this manner, assurances act as a performance bond imposed on the operator. Another potential use is as insurance to cover contingent liabilities — for example, remediation of the consequences of accidental or unforeseen pollution. In this latter case, an additional objective is to efficiently manage the risks of those liabilities that may arise (PC 2006d).

Boyd (2001) outlined several implementation challenges with financial assurances which could undermine their effectiveness. Calculation of the correct size of assurances can be difficult, especially in the case of long-term, uncertain environmental legacies. Compliance costs can be high in cases where regular monitoring and review of the size of the assurance is required to ensure its size reflects the potential liabilities. Disputes may arise over whether the operator has met its obligations and could discharge the assurance, resulting in litigation costs.

The Commission has found that financial assurances are most relevant where there is a high risk of environmental damage that otherwise would not be effectively managed or remediated under existing regulation. Financial assurances can reduce the risks and costs of polluters defaulting on their obligations to rectify environmental damage, and can encourage restoration and clean up. There is,

however, a difficulty in calculating a realistic amount for the assurance, which should be:

- based on a robust and transparent assessment of the potential remediation and rehabilitation costs, and be subject to regular review
- designed and applied in a way that minimizes compliance costs. For example, there should be a requirement to release components of the assurance as soon as the relevant obligation has been satisfied, as well as flexibility in the choice of assurance instruments (IC 1997; PC 2006d).

Self-regulation – an alternative to regulation

The EPHC National Chemicals Taskforce noted that industry had developed a number of self-regulatory and coregulatory programs that have delivered significant benefits to the environment and the community (table 9.1) (EPHC 2006b).

The NSW Department of Environment and Conservation requested that drumMUSTER establish performance targets that aim to increase end user participation and sought the support of state and territory governments for formal national arrangements, including increased data collection and target setting (NSW DEC 2006).

Measuring the effectiveness of ChemClear is difficult because the total amount of chemicals, including unwanted chemicals, being held by farmers is not known (NSW DEC 2006). The collection of more data to evaluate the effectiveness of self-regulatory initiatives should be considered in the context of the overall information collection arrangements.

9.4 A Framework for National Chemicals Environmental Management

The Framework for National Chemicals Environmental Management (NChEM) (EPHC 2006b) proposes key reforms to improve the environmental management of chemicals in Australia (box 9.5).

Box 9. The National Chemicals Environmental Management (NChEM) Framework

The NChEM framework includes four action areas.

1. Strengthening Environmental Risk Assessment — better consideration of environmental impacts in national chemical assessments
2. Streamlining Environmental Controls — nationally agreed actions to control risks to the environment from high risk chemicals across all states and territories
3. Informing Decisions — improving the capture of chemical impact information so that it is used effectively to inform decision making on chemicals
4. Prioritising Action — strategic consideration of priority and emerging chemical issues affecting the environment

Source: EPHC (2006b).

There is widespread support for most of the NChEM initiatives, from both government and industry. This support is reflected in the Ministerial Agreement on Principles for Better Environmental Management of Chemicals and the Chemicals Action Plan for the Environment (EPHC 2007c) signed by Commonwealth, state and territory environment ministers in June 2007. The Chemicals Action Plan prioritised steps to implement NChEM, including:

- the public release in August 2007 of Environmental Risk Assessment Guidance Manuals for industrial and agvet chemicals
- implementing improvements in consultation between NICNAS and state and territory environmental protection agencies on risk assessments
- drafting a manual of environmental controls
- all jurisdictions agreeing to implement the environmental controls recommended in NICNAS's chemical assessment reports, where the controls have been negotiated with environment agencies (EPHC 2007c).

The proposal to 'streamline environmental controls' was referred to the Ministerial Taskforce on Chemicals and Plastics Regulation Reform and the Commission's study. The Commission's report will provide input into decisions on this matter by the Ministerial Taskforce.

The effectiveness and efficiency of NChEM

It is difficult to judge the magnitude of the impact of NChEM on effectiveness and efficiency. NChEM involves a number of proposals within the four action areas outlined in box 9.5, which are to be implemented over time. Parts of the proposals are yet to be implemented, and those parts that have been implemented have only been operating for a short time. However, there is early indication that some parts of NChEM are producing positive outcomes, with a successful trial of early integration of state and territory environment agency input into NICNAS's assessment during 2007 (sub. 20).

The EPHC CWG will report on the implementation of NChEM and its effectiveness in promoting ecologically sustainable chemicals management every two years. It has also commissioned two cost–benefit analyses of the impact of NChEM — one on the impact on government and another on the impact on business and the community — but neither were available before this report was published.

Specific comments on proposals from the NChEM action areas are outlined below.

Strengthening environmental risk assessment

A key aspect of this NChEM action area is to improve the linkages between national chemicals assessment agencies and state and territory environment agencies responsible for implementation, administration and enforcement during the assessment phase, and to make risk assessment processes more accessible and transparent. This involves:

- developing risk assessment manuals, for both industrial and agvet chemicals, to detail the approach to undertaking environmental risk assessments (EPHC 2007a, 2007b)
- NICNAS alerting state and territory environment agencies about chemicals that have been assessed as a high concern
- NICNAS obtaining information from state and territory environment agencies to input into chemicals assessments
- NICNAS consulting with state and territory environment agencies on the scope of assessments and on draft recommendations
- strengthened risk assessment of agvet products (including on disposal), non-active ingredients and the volatility of product formulations (EPHC 2006b).

The public release of, and opportunity to comment on, the risk assessment manuals used by DEWHA in their environmental assessments is a positive step towards

increasing transparency of environmental risk assessments that they undertake on behalf of NICNAS and the APVMA, and improving their quality. It will also facilitate the contestability of environmental risk assessments, as recommended by the Australian National Audit Office in 2006 in relation to the agvet regime (ANAO 2006).

Streamlining environmental controls

This NChEM action area involves a regulatory arrangement for environmental risk management of industrial chemicals to ensure that NICNAS's recommendations on the environment are adopted uniformly and automatically by the states and territories. Under the current NChEM framework, it is proposed that NICNAS's role as the assessor of industrial chemicals would be augmented to include setting environmental risk management controls, including whether and how industrial chemicals can be used in Australia. Under the proposal NICNAS would have expanded powers to directly control many aspects of chemicals management. The states and territories would agree to enforce NICNAS's controls in their jurisdictions, and would review their legislation to ensure they have adequate powers to implement this complementary legislative framework for the environmental control of chemicals.

The proposed new arrangements would be underpinned by a Manual of Environmental Controls (currently being drafted) that would set out the tools available in setting standards for managing the impact of chemicals on the environment. Some of the environmental controls that could be used include restrictions on discharges to air and water, handling and storage specifications, bans and phase-outs, and waste management and disposal requirements.

An interjurisdictional agreement between NICNAS and state and territory environment agencies would be put in place to underpin the proposal. The agreement would outline consultation, implementation and enforcement arrangements (EPHC 2006b).⁸ A committee of officials, reporting to the EPHC (replacing the CWG), would also have an ongoing role in implementing the proposal and reporting to COAG on progress (EPHC 2006b).

⁸ This could build on the existing MOU, or be a separate agreement between NICNAS and state and territory environment protection agencies.

ACCORD Australasia has expressed some concerns about the efficiency of these proposed arrangements:

... the proponents of more onerous NChEM interventions, such as new regulation for industrial and consumer chemicals, have not demonstrated a compelling case that within Australia significant environment impacts are occurring that would warrant action above and beyond that which could be instituted using existing powers and regulations. (sub. 42, p. 13)

Concerns were also raised by the Plastics and Chemicals Industries Association (PACIA):

PACIA believes the current failures in the existing regulatory system are not due to the lack of powers. They are due to deficiencies and failings to best use existing powers resulting from poor implementation and/or a lack of commitment for effective communication within and between government agencies ... PACIA also supports the recommendation for NICNAS to explore with states and territories for an improved process for engaging with its MOU group. (sub. 33, attachment 1, p. 1)

Other concerns include:

- that the arrangement would create a disjointed regulatory framework, with NICNAS having a role of setting chemicals risk management standards as they relate to the environment, but having only an advisory role in relation to risk management standards for public health and OHS
- whether or not the proposal would replace existing state and territory regulations — if not, it could become an additional layer of regulation.

While there are various concerns with the proposal, there are also several efficiency advantages. The proposal would:

- provide industry with greater certainty on how, whether and when NICNAS's recommendations on the environment will be implemented
- improve national consistency in the take up and implementation of NICNAS's recommendations on the environment across jurisdictions
- reduce the administration costs to state and territory governments of implementing NICNAS's recommendations on the environment. Part of the reduction of cost would arise from removing the need to conduct regulatory impact analysis in each state and territory (for those states and territories in which it is required)
- allow the states and territories to respond to emerging chemicals issues in a timely way, without having to wait for them to become a priority in their jurisdiction

-
- be likely to become more valuable over time as the assessment of existing chemicals for their environmental impact and the likely need for new risk management measures to be taken increases.

These advantages would be enhanced if it could be demonstrated that the arrangement would replace existing state and territory regulations and lead to a reduction in regulatory burden.

Alternative arrangements for environmental risk management

There is considerable support among the states and territories for reform to chemicals environmental management, and the Commission considers that this momentum should be harnessed. In the Commission's view it is possible to draw on the underlying intent of the NChEM proposal while avoiding some of the significant concerns of having NICNAS set environmental management controls.

There is currently only a small number of chemicals assessed as requiring risk management action to protect the environment. DEWHA asserts that about 13 chemicals per year require environmental risk management actions (sub. DR104) although the Commission's own analysis of NICNAS's recommendations on the environment suggests that only a small number of assessments undertaken since NICNAS's inception have recommended significant action by the states and territories. However, improved communication between NICNAS, DEWHA and the states and territories on chemical assessments is expected to change the nature of environmental recommendations, and an increase in the rate of chemical assessments is likely to result in an increased number of risk management recommendations in the future.

The current Ministerial Agreement includes a commitment to implementing NICNAS's recommendations on the environment (EPHC 2007c). However, while there appears to be considerable goodwill among the current participants of the EPHC CWG, implementing risk management recommendations may not be a priority within jurisdictions on an ongoing basis without statutory compulsion.

The Commission has identified three options for reform that are consistent with its best practice governance framework.

- Option 1: Delay decision on formalising NICNAS having responsibility for environmental risk management pending review of early stage NChEM initiatives to establish a need for a standard-setting body. The states and territories have committed in the Ministerial Agreement to implement NICNAS's recommendations on the environment. Over the next two or three years, the CWG (or other group) could examine the nature and number of

NICNAS's recommendations on the environment and report to the EPHC on whether the arrangements under the Ministerial Agreement were operating successfully, or whether there were a sufficient number of risk management recommendations that were not being implemented, with subsequent identifiable risk to the environment, to justify a standard-setting body.

- Option 2: Rather than formalise the function in NICNAS, implement a modest standard-setting body to consider NICNAS's recommendations on the environment and set standards for managing the exposure to the environment of particular chemicals as needed. Any other work would need to be explicitly approved by the EPHC.
- Option 3: Implement a standard-setting body that sets standards it considers necessary to protect the environment from the impact of chemicals, including those arising from examining NICNAS's recommendations. For example, the body could consider whether a standard was needed on the disposal of chemicals. It could also examine whether past NICNAS assessments required standards to be set.

Option 1 has the advantage of being a low cost approach to ensuring that a new standard-setting body is necessary before it is implemented. Participants to the study representing industry argued that it needed to be demonstrated that the costs of any environmental standard-setting body (ESSB) should not exceed its expected benefits (ACCORD Australasia, sub. DR91; PACIA, sub. DR101). However, with risk management recommendations likely to increase over the next few years, there is a concern that necessary action to protect the environment would not be undertaken in a timely way, if at all, resulting in potential long term legacy costs. It would also leave the industry with considerable uncertainty as to whether, when and how the states and territories might take action on an issue.

Option 2 is consistent with the scope envisaged under the NChEM proposals while also being consistent with the Commission's preferred governance framework of standard setting being a function undertaken separately from the assessment body. It would be a low cost option that could result in nationally consistent and timely standards, and provide more certainty for industry. For many of NICNAS's recommendations, no action would be needed to ensure adoption.⁹ Accordingly, the standard-setting body would be able to focus on the small number of assessments that recommend risk management action and may require a standard to be set. The Tasmanian Government indicated that there were several ways such a mechanism could be implemented, including referencing or adopting a national environment

⁹ For example, action relating to waste disposal or spills containment are mostly addressed by existing state and territory waste management legislation.

standard or code through amendment to the dangerous substances regulations or through Ministerial approval of recognised codes (sub. DR107).

Option 3 would provide a comprehensive approach to managing the impact of chemicals on the environment, although at a higher cost.

The Commission considers that the most suitable option is option 2, a modest ESSB which would meet as and when required. It would provide a mechanism for a nationally consistent framework for the management of chemicals in the environment and address the anticipated emerging need for a national framework while containing its scope and potential costs.

Chapter 3 outlines the Commission's views on good governance and coordination. An ESSB that considers NICNAS's recommendations on the environment and sets standards as needed should be made within this framework.

- Responsibility for the policy development and oversight would rest with the EPHC as the multi-jurisdictional ministerial council, supported by the Environment Protection and Heritage Standing Committee (EPHSC).
- The regime would be underpinned by an intergovernmental agreement (IGA) that would specify governance arrangements, coordination mechanisms and consultation arrangements, and commit the parties to implement and maintain the agreed reform in a uniform manner. This IGA could formalise the consultation arrangements between NICNAS and the states and territories on industrial chemical assessments.¹⁰
- Hazard and risk assessment of industrial chemicals would continue to be undertaken by NICNAS, which would make recommendations on the environment, as it does for public health and OHS. NICNAS would continue to receive input from expert bodies.
- Environmental risk management standard setting would be undertaken by a national body of experts with mechanisms to allow jurisdictions to provide input on specific local issues and for advisory bodies to be established as necessary.
- Regulatory impact assessments would be undertaken by the ESSB where the reform had a material impact on the economy, and may require coordination with other regulatory bodies.
- The ESSB would draft standards (drawing on the Manual of Environmental Controls) for the approval of the EPHC¹¹, that the states and territories would

¹⁰ The NChEM Working Group (sub. DR119) suggested that the consultation arrangements could also be enshrined in the ICNA Act.

¹¹ With scope for the standard-setting body to make decisions on minor matters.

adopt uniformly and automatically.¹² Administration and enforcement would continue to be undertaken by state and territory environment agencies. Where actions were directed at the Australian Government, for example, aimed at preventing the import or export of certain chemicals, this would be achieved through Commonwealth legislation.¹³

- The standard-setting body would have formal linkages to NICNAS and would be required to respond to NICNAS's recommendations within a statutory timeframe. The response would be made publically available (recommendation 4.4).
- The need for the standard-setting body would be reviewed after a period of, say, five years to ensure its functions are effective and efficient, consistent with regulatory best practice. A sunset provision could be incorporated into its charter.
- The new regime would be funded by jurisdictions on a cost sharing basis.
 - This funding model is consistent with the funding arrangements for the ASCC the NTC. It avoids the compliance costs associated with levying a broadly based industry for a relatively small regulatory cost (appendix F).

The interaction between the standard-setting body and the APVMA would also need to be considered. The Animal Health Alliance was concerned that introducing an ESSB would duplicate the existing role of the APVMA (sub. DR68). DEWHA already assesses agvet chemicals for their impact on the environment and makes risk management recommendations. These are communicated to users through labels, which may also include hazard statements.

Under option 2, the ESSB would be confined mostly to considering NICNAS's recommendations, and standards would therefore be mostly confined to industrial chemicals. However, industrial chemicals may be present in agvet products, and meeting any environmental standards would need to be a component of the agvet product registration process.

¹² The NChEM Working Group (sub. DR119) suggested that automatic adoption could be facilitated through a link between state and territory legislation and environmental decisions collated in the ICNA Act. The Commission suggests that the state and territories referencing standards and codes drafted by the ESSB would be a more suitable option.

¹³ The NChEM Working Group (sub. DR119) suggested that this could be done by creating a provision in the ICNA Act that can be referenced in customs regulations. The Commission considers that this change is not warranted. First, customs regulations can incorporate some restrictions on the import of chemicals without formal links to other Commonwealth legislation. One example is the importation of asbestos. Second, utilising the ICNA Act and NICNAS for this purpose would confuse the chemical assessment focus of the scheme.

The agvet system currently interacts with other regulatory arrangements for chemicals, including for scheduled poisons and dangerous goods. The APVMA is currently undertaking reforms to streamline its approval processes and its interaction with an ESSB should be consistent with these reforms. For example, the APVMA should not be required to approve information on labels that are the subject of another regulatory regime (section 8.2).

Submissions have indicated that establishing an ESSB is feasible, with DEWHA suggesting that one option would be to establish a statutory committee under the NEPC Act (sub. DR104). This committee could be serviced by a secretariat set up under the NEPC Service Corporation, and could meet as needed. It could reject, modify or add to NICNAS's recommendations for approval by EPHC.

Drafting of the Manual of Environmental Controls is being progressed by the CWG and could be adopted and changed as necessary by any new ESSB. The ESSB would also need to work closely with other standard-setting agencies to ensure that implementation of a particular environment control did not create overlaps and inconsistencies with other regulations, for example, any requirements relating to:

- labelling, packaging, storage or handling during supply chain activities which would need to be consistent with existing OHS and agvet regulations (section 9.3)
- waste disposal which would need to be consistent with existing waste regulations.

RECOMMENDATION 9.2

The Commonwealth, state and territory governments should negotiate an intergovernmental agreement to create an independent standard-setting body to manage the impact of chemicals on the environment. This body should:

- ***report to the Environment Protection and Heritage Council (EPHC)***
- ***develop standards for the environmental risk management of chemicals and undertake regulatory impact assessment where appropriate***
- ***comprise members who are experts in standard setting, and have the ability to appoint advisory bodies as necessary***
- ***assess and respond to the NICNAS recommendations on the environment, with any other work to be agreed specifically by the EPHC***
- ***meet only as required and be funded by jurisdictions.***

The standards developed by this body should be submitted to the EPHC for consideration and approval, and adopted uniformly and automatically by the states and territories by reference. Once adopted, any variation by a jurisdiction

should, at a minimum, be reported to the EPHC and include a statement of reasons for the variation.

A sunset clause should apply to the new body, which would require that it be dissolved unless a review of its effectiveness and efficiency showed an ongoing need.

Informing decisions and setting priorities

Developing and implementing NChEM in the most effective and efficient manner will require good information systems and processes for setting priorities. In this respect the EPHC proposed that NChEM would:

- obtain any necessary information about chemicals in use to inform decisions
- establish feedback systems between the states, territories, DEWHA and NICNAS to evaluate the effectiveness¹⁴ of chemical management controls
- develop, and utilise effectively, information capture and feedback mechanisms
- establish a nationally coordinated priority setting process based on transparent criteria
- use the capacity of environment ministers and regulators to take issues forward (EPHC 2006b).

The NChEM proposal also recognises the importance of ensuring that information capture and feedback systems do not overburden industry with reporting requirements, and that they are used effectively and efficiently by regulators.

There are several initiatives in environmental monitoring underway.

- To meet Australia's commitments under the Stockholm Convention, DEWHA is developing a national network of measurement reference sites where sampling for POPs will begin in air, human blood or milk then expand to other media such as water, sediment, soil and wildlife. DEWHA is reviewing past and current POPs monitoring programs and will work with state and territory health and environment organisations, industry and the community. DEWHA has indicated the POPs monitoring program could be extended beyond the monitoring of Stockholm Convention chemicals to meet the wider NChEM monitoring objectives.
- DEWHA, under the NChEM framework, is preparing a national chemicals monitoring database providing a comprehensive inventory of chemical

¹⁴ This implies that a framework would be developed and data collected to evaluate effectiveness.

monitoring programs conducted in Australia over the past ten years. The database is expected to be on the DEWHA website in August 2008.

- NChEM contains three reforms designed to improve the capture of data on the environmental impacts of chemicals, and the feedback of this data into the chemicals prioritisation and assessment processes of NICNAS and the APVMA.
 - Where assessment data is limited or there is uncertainty on the environmental impacts of a chemical, NICNAS and APVMA chemical assessment reports may recommend that states and territories evaluate and report on the effectiveness of the chemical controls to be implemented.
 - Where a chemical is judged to pose a high risk to the environment, NICNAS and APVMA chemical assessment reports may recommend that chemical users undertake and report on specific monitoring (for example, water sampling) to verify the accuracy of assessment test data and assumptions.
 - NICNAS developing, and the APVMA reforming, their respective information feedback systems to better allow the public, industry and government agencies to report information on adverse environmental impacts of chemicals to regulators (EPHC 2006b).

The release of chemicals from consumer products, creating a potential hazard for human health or the environment, is an exposure pathway that has been raised as a particular concern by some participants to this study. For example, chemicals from products disposed to landfill may leach into the soil and contaminate ground water, or chemicals in cosmetics or therapeutic goods could enter the aquatic environment via sewage or household drainage.

A number of submissions to the Commission's draft report argued that any hazard identification system for chemicals in consumer products should also include environmental hazards (DEWHA, sub. DR104; the Queensland Government, sub. DR121; and the Tasmanian Government, sub. DR 107. The Ministerial Council on Consumer Affairs (MCCA) proposal to develop a hazard identification system could provide a model or vehicle for information on products with environmental hazards, if the need for such a system is established.

Any adverse environmental impacts from chemicals in consumer products could be identified by the expanded environmental monitoring proposed under NChEM, or reported to NICNAS or the APVMA through their adverse environmental information capture systems for further investigation.

The MCCA is developing a hazard-based identification system for consumer products, coordinated by the ACCC. Where health and safety issues are identified that relate to chemicals released from consumer articles, they will be investigated

and referred where appropriate (section 5.2). The European Union's experience in implementing its new provisions for the mandatory assessment (and possible regulation) of chemicals in or released from consumer products may also provide information on the environmental hazards associated with chemicals in products that is relevant to Australia. The Commission has suggested that this reform should be monitored before a similar approach is considered for Australia (section 5.2).

Increasing the rate of chemical assessments would also improve the information on environmental hazards from chemicals, and this could assist in examining issues relating to chemicals in consumer products (recommendation 4.6). The EPHC should monitor developments in this area in the context of its priority setting processes.

The Commission recognises the need for data to assess the effectiveness of environmental regulation but considers that as a general rule, the potential for better utilisation of existing information systems needs to be evaluated before collecting further data. Additional data collection systems should only be put in place where they produce net benefits (and prioritised according to those that produce the greatest net benefits), or are essential for monitoring achievement of international commitments (such as Australia's commitments under the Stockholm Convention). Consideration should also be given to how easily data can be aggregated and used to evaluate outcomes consistently across jurisdictions.

Examination of the need to collect more data on the environmental impacts of chemicals would benefit from having an overarching, nationally consistent, strategic framework that identifies environmental objectives and how to measure outcomes against them. While the DEWHA database should reveal where monitoring is (and is not) being undertaken, it will not show where monitoring should be targeted. To identify genuine needs for environmental monitoring, the Commission recommends that Commonwealth, state and territory governments develop a performance measurement framework similar to the PSIC exercise (sub. 39).

Benefits of this proposal include:

- providing a transparent, outcomes based and cost-effective approach to determining the need for, and resource allocation to, monitoring and reporting activities
- reducing the risk of excessive monitoring and reporting requirements on business, governments and regulators
- delivering the right type of environmental data to regulators to allow robust and informed decisions on the prioritisation and assessment of chemicals.

RECOMMENDATION 9.3

Commonwealth, state and territory governments should develop a performance measurement framework for monitoring the impact of chemicals on the environment that identifies national environmental monitoring and reporting objectives, and includes performance indicators for measuring outcomes against these objectives.

- *The data needed to construct these performance indicators should be compared to what is already collected (using the Department of Environment, Water, Heritage and the Arts database) to determine if any gaps exist.*
- *The case for further monitoring should be based on cost–benefit analysis and consider options for reallocating monitoring resources on a budget neutral basis.*