Environmental Compliance Report

Liquid Chemical Storage, Handling and Spill Management

Part C Final Report

Department of **Environment and Conservation** NSW

The Liquid Chemical Storage, Handling and Spill Management Environmental Compliance Program was undertaken by the Compliance and Assurance Section, Department of Environment and Conservation (DEC).

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Executive summary

In 2003, the Department of Environment and Conservation NSW (DEC) developed a comprehensive approach to environmental compliance, to build on and integrate the compliance audit and licence review processes. The comprehensive approach encourages improved environmental performance by combining assessing compliance with legislative requirements with reviewing industry best practice. Industry, licensees, state agencies, local government, the community and other stakeholders can provide input into various stages of the process by consulting with DEC.

Industries involved in liquid chemical storage, handling and spill management have been chosen for the first audit of industry sectors under the comprehensive approach to environmental compliance.

DEC conducted compliance audits on 52 licensed management facilities and 10 non-licensed premises regulated by DEC across NSW that store and handle liquid chemicals and manage spills. Compliance assessments were also conducted on 9 premises regulated by local government, in partnership with the responsible council.

In January 2006, DEC released a summary of the findings of these compliance audits ('Part A Compliance audit'—DEC 2005a) and a summary of the regulation and best environmental management practices ('Part B Review of best practice and regulation'—DEC 2005b). DEC then proceeded to review the audited licences, pursuant to s 78 of the *Protection of the Environment Operations Act 1997*.

This report, *Environmental compliance report—liquid chemical storage, handling and spill management: Part C Final report*, outlines regulatory changes to NSW facilities resulting from this compliance program.

Licence reviews have resulted in changes being made to some environment protection licences, to better align regulation with best environmental management practices. Changes include:

- requiring licensees to develop, implement and regularly update emergency response plans
- requiring suitable control measures such as high/low alarms, control valves and one-way valves on vessels containing liquid chemicals.

DEC is resolving other ongoing issues regarding liquid chemical storage, handling and spill management practices by developing:

- an education package incorporating guidelines on best environmental management practices
- a training course to help industry to better manage the storage, handling and spill management of liquid chemicals.

DEC is also introducing the Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2005. This Regulation contains requirements to minimise environmental impacts from underground petroleum storage systems.

DEC is involved nationally in developing and implementing an environmental risk management framework for chemicals and is contributing to the review of the National Industrial Chemicals Notification and Assessment Scheme.

Introduction

Comprehensive approach to environmental compliance

In 2003, the Department of Environment and Conservation NSW (DEC) developed a comprehensive approach to environmental compliance, to build on and integrate the compliance audit and licence review processes. The comprehensive approach encourages improved environmental performance by combining assessing compliance with legislative requirements with reviewing industry best practice. Industry, licensees, state agencies, local government, the community and other stakeholders can provide input into various stages of the process by consulting with DEC.

The comprehensive approach to environmental compliance was piloted with the wood preservation industry. The activity of liquid chemical storage, handling and spill management was chosen for the first audits of industry sectors for the comprehensive approach to environmental compliance.

This report is the final in a three-part series 'Environmental compliance report—liquid chemical storage, handling and spill management', and describes the progress and findings of the environmental compliance program. 'Part A Compliance audit' (Part A) (DEC 2005a), summarised the findings of compliance audits of facilities undertaking liquid chemical storage, handling and spill management activities across NSW. Audits were undertaken of 52 licensed facilities regulated by DEC in the following industry sectors listed in Schedule 1 of the *Protection of the Environment Operations Act 1997* (POEO Act):

- chemical industries or works
- chemical storage facilities
- livestock processing industries
- marinas and boat repair facilities
- mineral processing or metallurgical works
- shipping facilities (bulk)
- waste facilities—hazardous, industrial, group A & B waste processing facilities.

Audits were also conducted on a selection of DEC regulated non-licensed premises, and local government regulated premises were assessed in partnership with the responsible council.

'Part B Review of best practice and regulation' (Part B) (DEC 2005b), summarised the regulation and best environmental management practices and issues facing the industry and regulators.

Together, Parts A and B benchmarked industry performance, identified best practice and advised on action to be taken.

Following the release of Parts A and B in January 2006 and as part of a review of licences that were audited as part of the program, DEC called for public submissions regarding the licences and the regulation of the industry in general.

Licence reviews of the 52 licences of audited sites have now been undertaken, pursuant to s 78 of the POEO Act. The reviews involved reassessing the environmental protection issues at each site, the licensing decisions made for individual sites and the varying of licences where necessary.

Purpose of this report

'Part C Final report' provides information on the changes made to regulation of individual licensed premises in NSW and the progress of the environmental compliance program. The next chapter, 'Ongoing compliance performance' explains ways in which licensees have resolved issues identified during compliance audits. The chapter 'Improving environmental performance' discusses how changes to licence requirements have enhanced industrial practices relating to liquid chemical storage, handling and spill management, and 'Where to from here?' describes future initiatives that will further improve environmental performance.

This report has been prepared for the purpose described and no responsibility is accepted for its use in any other context or for any other purpose.

Selection of activity—liquid chemical storage, handling and spill management

DEC frequently regulates all industrial activities licensed under the POEO Act, through, for example, conducting site inspections and reviewing annual returns. In addition, DEC has a rolling program of intensive compliance audits of industry sectors and activities. Sectors and activities targeted in DEC's environmental compliance programs are chosen through assessment of major environmental and community concerns, and DEC corporate objectives and strategies.

Criteria considered in the audits and subsequent reviews include the likelihood of harm to human health and the environment from an activity, the nature of and hazards associated with the chemicals used, emissions and wastes from the activity, gaps in understanding the activity, environmental performance, community concern, and the opportunity to make significant environmental gains in relation to the activity.

Description of the activity

Chemical storage, handling and spill management occur on a large number of premises covering a wide range of industry types, both scheduled and non-scheduled, under the POEO Act. Liquid chemicals are used in many different ways, including as raw materials for the manufacture of products, for product modification, for cleaning purposes, for maintenance of plant and equipment, and as a source of energy.

Wherever liquid chemicals are stored and handled there is potential for air, soil, groundwater and surface water pollution to occur through spills or other releases. Other potential releases include fugitive losses or leaks from the valves, pumps, flanges and seals connected to liquid chemical storage and handling equipment. The potential for loss varies between and within premises according to the chemicals involved, the management practices used and the physical setting. To prevent the discharge of pollutants from liquid chemical storage and handling activities, industry should minimise the quantities stored on-site, store materials in designated areas, install

secondary containment facilities, conduct regular inspections, develop and implement emergency spill management procedures, and train employees and subcontractors.

Bulk storage

Generally, very large volumes of liquid chemicals used as raw materials or manufactured as products are transported to and from sites by bulk tankers and are stored in bulk tanks made of corrosion-resistant materials. These bulk liquid chemical storage tanks can be located either above ground or below ground.

Storage tanks containing liquids with a high vapour pressure should be designed and built in accordance with best engineering practice and relevant Australian Standards and have a floating roof, an internal floating raft or an inert gas blanket to minimise the escape of vapours to the atmosphere. Bulk tanks should be protected by secondary containment facilities, such as a bund (a low impervious wall) around an individual tank or cluster of tanks (tank farm) with a sump, to contain spills and leaks which may otherwise be discharged off-site.

Secondary containment facilities should have low permeability, the capacity to contain at least the volume of liquid in the largest tank within the store, and adequate additional capacity to contain any rain water or firewater as necessary. Pipework should not pass through the walls, but if this is unavoidable, the pipe should be sealed into the wall with a material that is resistant to attack by the chemical stored to ensure that the store remains leakproof.

Package storage

A wide variety of liquid chemicals are routinely delivered, distributed, stored or dispatched in packages ranging from containers with a few litres capacity up to 200-litre drums, and intermediate bulk containers holding approximately 1000 litres. Packages may be delivered by trucks in, for example, shipping containers to a central receiving area (transfer station) and then distributed to various satellite stores around the site, or be delivered directly to the satellite stores. Packaged materials also should be stored within impervious secondary containment facilities. Dangerous goods (substances listed in the Australian Dangerous Goods Code) must be stored in designated areas with appropriate placarding and isolated from incompatible materials. Liquid chemical products from industrial processes vary widely in nature, and are generally stored in a similar manner to raw materials. In general, for multiple container storage, containment stores should have sufficient capacity to contain at least 25% of the total volume of the containers being stored and have adequate additional capacity to contain any rain water or firewater as necessary.

Waste storage

Liquid chemical wastes from industrial processes are generally stored in tanks or drums, and need to be assessed and classified in accordance with the POEO Act and *Environmental guidelines: assessment, classification & management of liquid & non-liquid wastes* (DEC 2004) before disposal. Such wastes can contain a number of contaminants, such as corrosive materials, oil and grease, nutrients and heavy metals. Waste lubrication oil is often stored in tanks or 200-litre drums within workshop areas. Many sites have trade waste agreements with the local wastewater authority, and pre-treat contaminated water before discharging it to the sewerage system. Generally, all tanks and drums containing liquid wastes should be located in an impervious secondary containment facility.

Other liquid chemicals

Liquid chemicals used in the maintenance, repair and operation of plant and equipment, such as fuels, lubricating oils, hydraulic oils and liquid cleaning agents, are likely to be delivered to the site by bulk tanker or packages on trucks. Often fuels are stored in above-ground or below-ground storage tanks. Oils are usually delivered in 200-litre or smaller drums and are stored in workshop areas. Cleaning products are usually supplied in smaller plastic packages and stored in storerooms or cupboards. As with raw materials and wastes, any significant quantities of these materials should be transferred and stored within impervious secondary containment facilities.

Used packages

Used packages (drums and containers) should be stored with their caps on to prevent any residues from being spilt or otherwise escaping. Sometimes used drums and containers are rinsed out on-site and the wash waters are directed to the sewer or a treatment facility on-site before disposal.

Handling

Generally, liquid chemicals are dispatched and delivered in designated loading/unloading docks or terminals or adjacent to tank farms or storehouse buildings. To prevent or minimise any leaks or spills that may occur during loading and unloading and that may result in air pollution, soil contamination or stormwater pollution, industry should provide air pollution controls where necessary and containment structures to contain any spills and leaks.

Bulk liquid chemicals are usually transported on-site site via pipelines, and packaged liquid chemicals are usually transported by forklift, hand-barrow or hand. Forklift drivers and other operators should be appropriately trained. Any damaged containers or spillage should be reported immediately and appropriate action taken. External areas on the site, where packaged liquid chemicals are transported to, should drain to a collection system such as a first flush detention basin designed to capture any spills or leaks.

Maintenance

Bulk storage tanks, secondary containment facilities, pipework, stormwater treatment devices and so on should be regularly inspected and subject to preventive maintenance programs.

Incident management

The storage, handling and transport of liquid chemicals have the potential to cause environmental pollution through spillage or other release to the air, ground and water. The level of sophistication of the spill containment, clean-up and recovery measures required will be determined by the quantity of chemicals being stored and their individual qualities such as compatibility with other chemicals and potential impact on the environment. Generally, premises storing large quantities of liquid chemicals or higher-risk liquid chemicals have emergency management plans that include spill clean-up procedures, firewater management and specialist training for people responsible for implementing the plans. All personnel should be trained in emergency management procedures, and live emergency drills using the emergency management plan should be conducted at least annually. Even premises that store small quantities of lower-risk chemicals should train their personnel in spill containment procedures and have spill kits in place, containing adequate spill response equipment such as absorbent material where required. All industries should maintain up-to-date Material Safety Data Sheets for the chemicals stored or used on-site and ensure that staff understand the hazardous properties of these chemicals and know how they should be handled.

Road and Rail Transport (Dangerous Goods) Act 1997

The transport of dangerous goods in NSW is regulated under the *Road and Rail Transport (Dangerous Goods) Act 1997*, relevant Regulations and the Australian Dangerous Goods Code (1998) (ADG Code). Driver and vehicle licensing is required under the NSW Road and Rail Transport (Dangerous Goods) (Road) Regulation 1998, when dangerous goods are transported in bulk. DEC licenses the bulk transport of dangerous goods, including the transport of liquid chemicals. The criteria for classifying goods as 'dangerous' are outlined in the ADG Code.

Risk of harm to the environment

The storage and handling of liquid chemicals and the management of spills pose a potential risk of harm to the environment and can be major sources of pollution at industrial premises. Best environmental management practices identified in Part B should be used to address risks to the environment from:

Air pollution

- point-source air pollutant emissions from tank vents and tank roofs storing volatile liquid chemicals
- fugitive air pollutant emissions, and possibly odours, from transferring chemicals from delivery vehicles to chemical storage areas
- fugitive air pollutant emissions from losses or leaks from the valves, pumps, flanges and seals from storing and handling raw materials and products.

Water pollution and soil contamination

- spills or leaks of liquid chemicals during delivery
- spills or leaks from the transfer of liquid chemicals to permanent storage areas
- spills or leaks from liquid chemical storage areas and waste liquid chemical storage areas
- spills or leaks from disused containers and damaged drums, containers and packages
- discharges of inadequately treated contaminated stormwater to waters
- deliberate spillages caused by unauthorised personnel
- past inappropriate management practices.

Incident management

- toxic air emissions, smoke or odours from a fire or explosion
- contaminated firewater discharges to soil, surface waters or groundwater
- leaks from the storage of contaminated spill residues, personal protective equipment and clean-up equipment.

Liquid chemical storage and handling systems should be designed and managed using best environmental management practices to ensure that liquid chemicals are not lost from storage tanks and containers or piping systems through spills and leaks, and to minimise losses during transfer operations.

Ongoing compliance performance

Part A summarised the findings of compliance audits of 52 licensed premises that store and handle liquid chemicals. Follow-up by DEC shows that issues identified during the compliance audits have been addressed by licensees in the following ways:

Water pollution and soil contamination

Bulk tank storage

Bulk liquid chemicals were not being stored in a manner that would contain spills and leaks at 23 of the audited premises.

Licensees who were required to improve the bulk storage of liquid chemicals have undertaken the necessary compliance improvements, including:

- establishing regular inspection and maintenance programs for bulk tank storage systems
- constructing containment systems around bulk storage tanks with adequate capacity to contain spills and leaks, and ensuring that containment systems have impervious surfaces to prevent spills and leaks from discharging outside.

Packaged materials storage

Packaged materials in containers, drums and intermediate bulk containers were not being stored in a manner that would contain spills and leaks at 31 of the audited premises.

Licensees who were required to improve packaged material storage have undertaken the necessary compliance improvements, including:

- regularly inspecting and maintaining packaged material stores
- providing suitable containment for packaged materials
- storing packaged materials in such a manner and location that if containers are ruptured or toppled, the contents will not spill outside the containment structure.

Used package storage

Used packages were not being stored and managed in a manner that would prevent the pollution of waters at four of the audited premises.

Licensees who were required to improve the storage and management of used packaged materials have undertaken the necessary compliance improvements, including:

- providing secondary containment for, and properly sealing and disposing of, empty containers
- rendering safe, puncturing or crushing containers not for reuse, storing them in areas with secondary containment or disposing of them.

Liquid chemical handling

The delivery of liquid chemicals to, and the dispatch and transport of liquid chemicals within, the premises were not being undertaken to prevent the spillage or leakage of chemicals from polluting waters at 24 of the audited premises.

Licensees who were required to improve the handling of liquid chemicals have undertaken the necessary compliance improvements, including:

- undertaking all loading and unloading operations in containment areas with adequate spill containment capacity
- regularly inspecting hoses, couplings and other equipment used in the delivery/dispatch of liquid chemicals for failure or leaks
- training personnel in preventing spills during loading and unloading operations
- providing suitable spill containment for transfer points outside a bund
- providing tanks with level indicators or high level alarms
- establishing regular inspection and maintenance programs for stormwater systems.

Pollution studies

One premises was required to address failures to regularly and properly maintain the stormwater system by undertaking a pollution study. The study was completed, and a maintenance schedule has been developed.

Miscellaneous

Various practices which had the potential to pollute waters were being undertaken at 11 of the audited premises.

Licensees who were required to improve practices relating to the storage and handling of liquid chemicals have undertaken the necessary compliance improvements, including:

- establishing dedicated areas with adequate containment for storing disused equipment or appropriately disposing of disused equipment
- developing an inventory system for chemicals dispatched using a 'cradle to grave' approach
- ensuring that the secondary containment system for incompatible materials does not drain to a common sump
- ensuring that water treatment devices are not overloaded
- establishing ongoing operational monitoring of equipment.

Air pollution

Vapour recovery

Issues relating to vapour recovery were identified at three of the audited premises. Vapour recovery systems attached to underground tanks were venting to the atmosphere.

The licensees are investigating options for minimising the venting of chemical vapour to the atmosphere, for example, by improving filling operations.

Miscellaneous

Issues relating to potential air pollution were identified at two of the audited premises.

Licensees who were required to improve the maintenance and storage of liquid chemicals have undertaken the necessary compliance improvements, including:

- ensuring that waste storage and treatment dams are properly maintained to prevent the formation of anerobic conditions
- ensuring that solvent storage facilities are properly ventilated
- upgrading the procedure for cleaning drums and the way liquid chemicals are decanted.

Incident/spill management

Emergency management plans

Inadequate or no formal emergency plans to deal with all types of incidents were identified at nine of the audited premises.

Licensees who were required to develop or update emergency management plans have undertaken the necessary compliance improvements, including:

- developing and implementing emergency management plans
- upgrading emergency management plans to deal with firewater management, management of non-hazardous materials and all other types of incidents.

Training

Inadequate training in emergency management procedures was noted at five of the audited premises.

Licensees who were required to improve staff training have undertaken the necessary compliance improvements, including:

- developing and implementing procedures to ensure that all operational staff are trained in emergency management procedures and that emergency management drills are regularly undertaken
- developing and implementing procedures to train staff in spill management and the use of spill kits.

Response infrastucture and equipment

Inadequate response equipment was noted at eight of the audited premises.

Licensees who were required to improve emergency response infrastructure and spill response equipment have undertaken the necessary compliance improvements, including:

- obtaining emergency response equiment and placing it appropriately to enable emergencies to be dealt with immediately
- implementing procedures to maintain emergency response equipment.

Firewater management

Inadequate firewater management systems were identified at two of the audited premises.

Licensees who were required to improve firewater management on-site have undertaken the necessary compliance improvements, including:

- implementing systems to contain contaminated firewater
- maintaining the residual capacity of the stormwater pond to capture contaminated firewater.

Miscellaneous

Inappropriate incident management practices were noted at nine of the audited premises.

Licensees who were required to put in place practices to improve the management of incidents on-site have undertaken the necessary compliance improvements, including:

- properly labelling chemical storage containers
- segregating incompatible materials.

Improving environmental performance

Purpose of environment protection licences

Environment protection licences set environmental performance requirements for activities determined by the POEO Act. Licences may specify a required performance outcome or a specific environmental management practice.

Environment protection licence conditions take into account factors such as the surrounding environmental conditions, the type of activity and the available technology. Pollution reduction programs and pollution studies are often attached to licences, requiring licensees to carry out work within a specified timeframe to enable them to comply with environmental requirements.

Changes to environment protection licences are negotiated with each licensee.

Licence reviews

Licence reviews have been conducted on 52 audited licensees.

Section 78 of the POEO Act requires DEC to review environment protection licences once every three years. (Amendments to the POEO Act which commenced on 1 May 2006 will change the licence review period to five years). The reviews allow DEC to:

- focus on desired environmental outcomes
- enhance consistency between licences issued to the industry
- improve the effectiveness of the licensing system
- strengthen DEC's accountability to stakeholders.

By successfully integrating reviews with other regulatory activities, such as compliance audit programs, a more holistic licensing approach has been developed. The comprehensive approach involves broad communication with industry, local government and the community, to best achieve improvements in environment protection.

A licence review approach has been developed to summarise the issues raised in Part A and the best environmental management practices identified in Part B. Parts A and B were distributed to regulators, industry and interested members of the public. Feedback on the findings of the program was received from licensees, industry groups and councils.

The licence review process focussed on licence conditions relating to liquid chemical storage, handling and spill management practices.

The environmental management issues identified in Part A and the best environmental management practices identified in Part B, were generally found to be relevant to all 52 licences. To choose the most effective regulatory response, each licensee's environmental performance was assessed, taking into account the environmental sensitivity of each site.

Changes to licence requirements

The changes made to licences will ensure improved environmental performance, consistent with the best environmental management practices identified in Part B.

Storage and handling

Current licence conditions require that the handling, movement and storage of liquid chemicals must be carried out in a 'competent manner' and that plant and equipment installed at the premises or used in connection with the licensed activity be maintained and operated properly and efficiently.

The storage, handling and spill management of liquid chemicals pose a potential risk of harm to the environment and can be a major source of soil contamination, and water and air pollution, in industrial premises.

The best environmental management practices regarding storage, handling and management of liquid chemicals include the following (refer to Part B):

- adequate separation distances of tanks from boundaries and ignition sources
- compatible storage of chemicals
- impervious barriers to prevent the discharge of spills
- clear labelling and proper placarding
- adequate spill capacity and trajectory spill containment and roofing where possible
- overfill protection, alarms and level indicators
- staff training
- segregation of stormwater
- proper stacking of containers
- site security
- supervised loading and unloading
- pipes located over the containment structure and drainage valves in closed position
- treatment of used containers.

DEC considered that conditions on five licences relating to high/low level alarms needed to be changed so this requirement applied to all chemical storage and handling practices at these premises. The condition now requires licensees to ensure that all suitable measures (for example high/low alarms, control valves with interlock control, one-way valves) are installed on all tanks, ponds or clarifiers, and any associated pipes and hoses to prevent spills of material that could harm the environment.

Incident management

Best environmental management practices regarding incident management include the following:

- spill and emergency response plans
- regular training and drills
- accessible spill and response equipment

- immediate containment of spills and proper disposal
- prevention of the discharge of contaminated firewater.

DEC considered that 35 licensees should prepare and maintain emergency plans, detailing procedures to deal with all types of incidents (for example spills, explosions or fire) that may occur at the premises or that may be associated with activities that occur at the premises and which are likely to harm the environment.

Regulation of non-scheduled sites

Premises not regulated by DEC are generally regulated by local government through the POEO Act. To support councils in this environment protection regulatory role, we have sent Parts A and B to all local councils and regional organisations of councils in NSW.

DEC officers accompanied local government officers on compliance inspections of nine liquid chemical facilities regulated by local councils. This enabled DEC and council regulators to share information.

Recommendations by DEC and local government officers for these sites were consistent with requirements placed on environment protection licences.

DEC also audited 10 non-licensed facilities across NSW regulated by DEC. Four of these premises are owned and operated by DEC, three by other State Government agencies and three by local councils.

This program has successfully laid the groundwork for more consistent regulation of liquid chemical storage, handling and spill management practices in NSW. DEC will continue to help local government to promote environmental improvements, and ensure sites regulated by DEC are operating properly and efficiently.

Where to from here?

This report, Part C, outlines the steps DEC has taken to establish a regulatory framework that is consistent with the best environmental management practices worldwide, and that will lead to the improvement of environmental compliance in liquid chemical storage, handling and spill management practices.

The licensing approach from this program will continue to be used to guide the assessment of any future development applications for new licences. DEC will continue to work with industry and councils to improve environmental performance at sites in NSW involved in the storage, handling and spill management of liquid chemicals.

In addition to ongoing compliance and environmental improvements implemented as part of this program, other educational and regulatory actions are being undertaken.

These actions include:

- developing an education program to help raise awareness and improve industry environmental performance:
  - through the program, guidance documents on storage, handling and spill management practices will be developed to help business implement the necessary changes outlined in Parts A and B
  - a training course will be developed to help industry to understand and implement appropriate procedures and measures for the storage, handling and spill management of liquid chemicals
- releasing the draft Protection of the Environment Operations (Underground Petroleum Storage Systems) Regulation 2005:
  - the proposed Regulation will minimise the risk of soil and groundwater contamination from leaking underground petroleum systems—the Regulation will require compliance with *CP4-2002 Code of practice for the design, installation and operation of underground petroleum storage systems* (Australian Institute of Petroleum Ltd 2002)
  - local councils must be notified when an underground storage tank is decommissioned to enhance their decision making in the planning process
- releasing liquid waste fact sheets on protecting the environment and business:
  - five fact sheets providing important information on best management practises and managing liquid waste have been released, entitled: *Handling liquid waste, Storing liquid waste*; *Preventing spills*; *Responding to spills* and *Reducing liquid waste through cleaner production* (DEC 2005c)
- involvement in the environmental risk management framework for chemicals
  - DEC is leading the development and implementation of an environmental risk management framework for chemicals under the auspices of the Environment Protection and Heritage Council, which aims to manage and minimise the potential risks of chemicals across Australia. The framework aims to deliver: a new system for considering emerging and priority environmental chemical issues; strengthened consideration of environmental impacts in chemical assessments; nationally agreed and consistent actions to control risks to the environment; and ways to capture chemical impact information so it can be used to inform decision making

  - related projects have been completed in response to the need for better information about chemicals, including the 'National chemicals information gateway project' and the *National chemical reference guide for environmental criteria for chemicals* (Environment Protection and Heritage Council 2005). In addition, DEC is developing a prototype education/information program for household chemical users

- involvement in the National Industrial Chemicals Notification and Assessment Scheme (NICNAS):
  - DEC is actively involved in NICNAS, which is administered by the National Occupational Health and Safety Commission. NICNAS is a national notification and assessment scheme to protect the health of the public, workers and the environment from the harmful effects of industrial chemicals. DEC is currently working closely with NICNAS on its review and reform program
  - DEC provides ongoing policy and technical advice to NICNAS on the review of priority existing industrial chemicals and the review of low risk industrial chemicals.

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