Australian Government
Department of Infrastructure and Regional Development

GEM-002

PFC – management actions advice

Application of Guideline for Environmental Management (GEM)

This GEM applies to soils, sediments, surface and ground water, wastewater and infrastructure where contamination from perfluorinated chemicals (PFCs), which include but are not limited to perflurooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA), may be detected at leased federal airports.

Introduction

There are currently no Australian standards for the assessment or management of PFCs in soil, sediment, surface water or groundwater.

This GEM provides a guide to operators of undertakings on the reasonable and practicable management of PFCs which may be encountered during building activities on leased federal airports. Building activities are defined under the *Airports Act 1996 s98,* and have a broad scope. The Airport Building Controller (ABC) liaises with the Airport Environment Officer (AEO) on any building activity considered to have an environmental impact and to confirm compliance with Airports (Environment Protection) Regulations 1997 (AEPR).

A number of national and international government agencies, along with research institutions, are currently investigating PFCs as contaminants. It is likely that any national PFC management strategies emerging from this research will ultimately be implemented in a national Australian standard once determined. In the interim, with respect to the management of PFCs at leased federal airports, this GEM provides guidance for the management of PFCs **until 30 June 2016 unless rescinded sooner.**

PFC Management Strategy

The AEPR impose a general duty to avoid polluting. Sub-regulation 4.01(2) requires an operator of an undertaking at a leased federal airport to take all reasonable and practicable measures to prevent the generation of pollution and, where prevention is not reasonable or practicable, to minimise the generation of pollution from the undertaking. In addition, general common law duty of care may be relevant in relation to PFC contamination at leased federal airports.

The considerations that determine whether a measure is reasonable and practicable include:

a) the sensitivity of the receiving environment to pollution that the undertaking is capable of generating; and

b) the nature of the harm that pollution that the undertaking is capable of generating will cause, or has potential to cause; and

c) the current state of technical knowledge about preventing, or minimising, pollution being generated from an undertaking of the kind being operated; and

d) all measures that might practicably be used to prevent or minimise the pollution, and the probable benefits and detriments (if any) that should be expected from the implementation of each measure.

In order to address current environmental issues associated with PFCs at leased federal airports, and in alignment with the Regulations 1.02 Objects (Attachment A), it is recommended that site assessments are undertaken consistent with the requirements of the National Environment Protection (Assessment of Site Contamination) Measure 1999 (NEPM). Schedules to the Measure of the NEPM provide a nationally consistent approach to the assessment of site contamination by regulators, site assessors, environmental auditors, land owners, developers and industry (Attachment B). In summary the process is as follows:

1. Conduct a Trigger Assessment of the site. The Trigger Assessment should determine if there is a likelihood of known or potential PFC contaminating activities occurring (presently or in the past) on or in the vicinity of the building activity site. This determines whether the assessment of the site triggers a Preliminary Site Investigation as per Schedule A of the NEPM. If there is no reason to expect PFC contamination, and assuming there are no limiting matters for other contaminants, then no further assessment for PFCs is warranted. The Trigger Assessment report for the site should be provided as part of the building application submission.

2. Undertake a Preliminary Site Investigation as per Schedule A of the NEPM process for the Assessment of Site Contamination **if** the Trigger Assessment of the site triggers the requirement for a Preliminary Site Investigation. The Preliminary Site Investigation should be sufficient to identify whether contamination exists on the site. The NEPM clearly indicates that the characterisation of site contamination should be conducted by professional environmental practitioners suitably qualified and experienced in the assessment of contaminated sites. The Preliminary Site Investigation report should be provided as part of the building application submission.

3. Assuming there are no limiting matters for other contaminants, and the results of the Preliminary Site Investigation indicates there **is** reason to expect PFC contamination or there is not sufficient information to determine otherwise, then the operator of an undertaking should initiate a Detailed Site Investigation as per Schedule A of the NEPM process for the Assessment of Site Contamination. The Detailed Site Investigation report should be provided as part of the building application submission.

Where the operator of an undertaking is someone other than the ALC, the Trigger, Preliminary and Detailed Site Investigations and site risk assessment should be undertaken in collaboration with the ALC.

Once the above relevant report(s) have been provided, and considered to be in accordance with this GEM and the NEPM, and demonstrates the proposed building activity meets the requirements under Regulation 4.01(2), the Department will not seek to intervene in the proposed building activity specifically on PFC environmental pollution grounds. This will enable

the ALC and/ or the operator of the undertaking to proceed with the proposed building activity at its own risk.

The ALC should bear in mind that under the airport leases, the ALC has no claim against the Commonwealth for damages or costs it may sustain as a result of environmental damage occurring prior to the grant of the lease, and that under the leases, ALCs have indemnified the Commonwealth in respect of such claims from parties other than the ALC. The position is largely the same in relation to any such claims arising after the time the leases were granted.

Operators of undertakings should note this GEM does not preclude the ALC and/or operator of the undertaking being required to undertake additional measures in the future, such as remediation or disposal, to address PFC contamination at sites once a national standard and management practices for PFCs are established.

Background

Perfluorinated chemicals (PFCs), also known as fluorosurfactants, are present in a variety of industrial, commercial and consumer products in Australia. PFCs have been commonly used to improve the ability of fire-fighting foam to smother fire; these chemicals have been used on fires at emergency and training sites of leased federal airports as well as in fire suppression systems at facilities, aircraft hangars and aviation fuel farms. They have also been used in a wide variety of industrial applications including textiles and leather products, metal plating, food packaging, floor polishes, denture cleansers, shampoos, coatings and coating additives, in the photographic and photolithographic industry, and medical devices.

Perfluorinated chemicals are persistent and are known to bioaccumulate. Some have been reported to cause toxic effects in laboratory animals, raising concerns to human health[1]. Despite this, there are currently no Australian standards for the assessment or management of PFCs in soil, sediment, surface water or groundwater.

The Department has been working with Airservices Australia, the Department of Defence and the Department of Environment (DoE) to progress the development of national standards for the management of PFC contamination. As part of this, consultancy firm GHD developed a framework for PFC management. The framework, *Managing PFC Contamination at Airports Interim Contamination Management Strategy and Decision Framework*, is available to airports and is intended to facilitate discussion on PFC management at leased federal airports.

The Department is seeking agreement from DoE to adopt the framework as an interim Commonwealth policy while DoE works with other regulators, including states, territories and

[1] PFC derivatives and chemicals on which they are based alert Factsheet NICNAS
http://www.nicnas.gov.au/communications/publications/information-sheets/existing-chemical-info-sheets/pfc-derivatives-and-chemicals-on-which-they-are-based-alert-factsheet
Perfluorinated chemicals (PFCs) Factsheet
http://www.nicnas.gov.au/communications/publications/information-sheets/existing-chemical-info-sheets/perfluorinated-chemicals-pfcs-factsheet

the Cooperative Research Centre for Contamination Assessment and Remediation of the Environment (CRC CARE) to develop permanent national standards and policies.

In 2009, PFOS was added to the annexes of the Stockholm Convention on Persistent Organic Pollutants (the Convention). Australia became a signatory to the Convention in 2004 and an amendment to the annexes takes effect upon ratification of the amendment, which Australia is considering. PFOA is a related compound to PFOS and is not captured under the Convention.

In February 2007 the National Industrial Chemicals Notification and Assessment Scheme (NICNAS) advised that alternatives to PFOA should be sought[2]. The NICNAS has consolidated and updated information on perfluorinated chemicals:

1) pfc-derivatives-and-chemicals-on-which-they-are-based-alert-factsheet

2) perfluorinated-chemicals factsheet

Your local waste disposal authority should be contacted for more information on options for the disposal of PFC waste.

References

http://www.crccare.com/case-study/fighting-fire-fighting-foam

http://www.nicnas.gov.au/communications/publications/information-sheets/existing-chemical-info-sheets/pfc-derivatives-and-chemicals-on-which-they-are-based-alert-factsheet

http://www.nicnas.gov.au/communications/publications/information-sheets/existing-chemical-info-sheets/perfluorinated-chemicals-pfcs-factsheet

http://www.scew.gov.au/nepms/assessment-site-contamination

http://www.comlaw.gov.au/Details/F2013C00288

Approved by Director, Airport Infrastructure Regulation, Airports Branch

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Amendment Record

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1	***Initial issue. All New document***	*M.Buchanan*	*March 2015*
2	*Version 2*	*M.Buchanan*	*June 2015*

[2] PFC derivatives and chemicals on which they are based alert Factsheet NICNAS http://www.nicnas.gov.au/communications/publications/information-sheets/existing-chemical-info-sheets/pfc-derivatives-and-chemicals-on-which-they-are-based-alert-factsheet

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Attachment A

AEPR Regulation

1.02 Objects

The Objects of these Regulations are:

a) to establish, in conjunction with national environment protection measures made under section 14 of the *National Environment Protection Council Act 1994*, a Commonwealth system of regulation of, and accountability for, activities at airports that generate, or have potential to generate:

   i. pollution; or

   ii. excessive noise; and

b) to promote improving environmental management practices for activities carried out at airport sites.

Schedules to the Measure

7 Schedules

This Measure contains the following Schedules:

(1) Schedule A

Schedule A in this Measure identifies the general process for the Assessment of Site Contamination.

(2) Schedule B

Schedule B in this Measure identifies general guidelines for the Assessment of Site Contamination.

8 Stages of investigation

Schedule A shows the staged site assessment process indicating which general guidelines are applied to preliminary and detailed site investigations.

The preliminary investigation usually involves:

(a) establishing a site history to identify the characteristics of the site (such as the location and layout of the site, the building construction on the site, the geological setting, current and past activities at the site, current and past uses of the site, and heritage considerations); and

(b) inspecting the site; and

(c) interviewing representatives for the site.

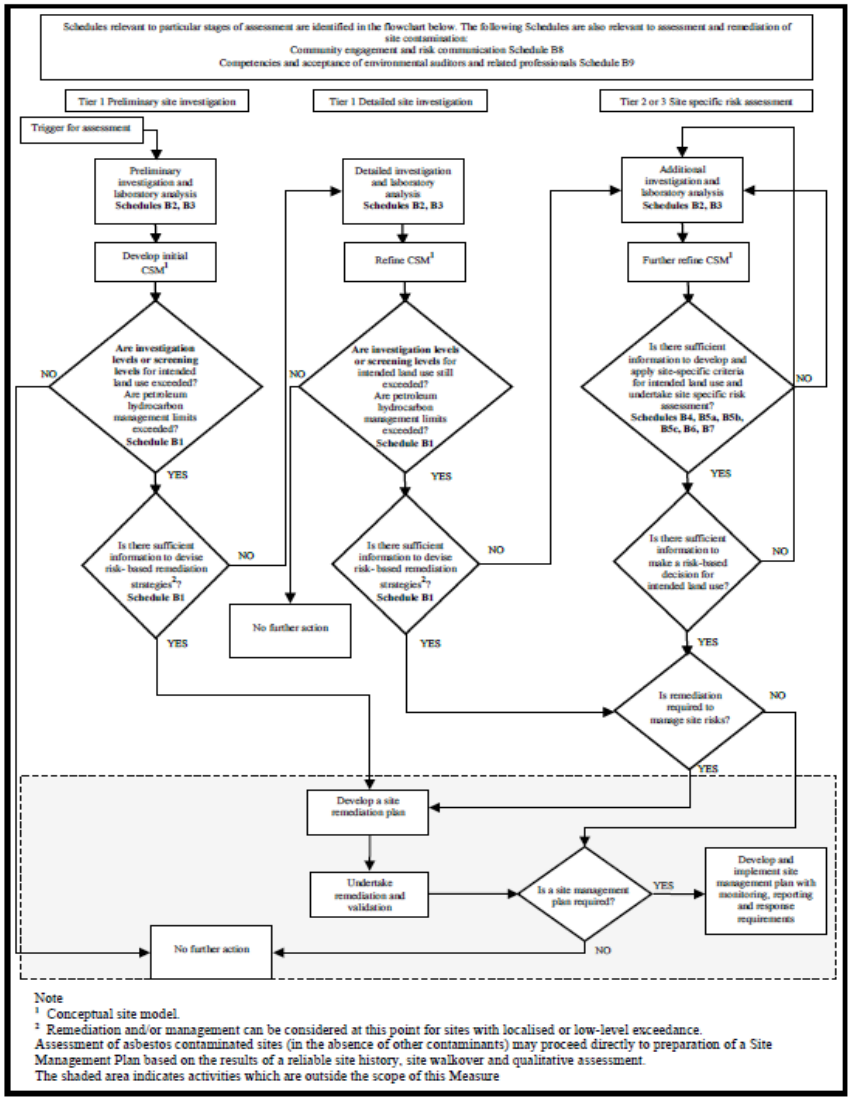
Investigations are usually confined to areas where potentially contaminating activities have occurred and involve a site history-based sampling plan. The preliminary investigation and initial assessment of site contamination should consider the possibility of all forms of potential contamination based on past land use. The preliminary investigation should be sufficient to identify whether contamination exists on the site. Contamination may not be completely delineated at this stage.

A detailed investigation is required when the results of preliminary investigation are insufficient to enable site management strategies to be devised. Potential or actual contamination will need further evaluation. Potential contamination may have been indicated by the presence of unexpected underground structures (eg. underground fuel or chemical storage tanks) or by the presence of imported fill (eg. ash, odorous material or various types of refuse) or staining of soil. Actual contamination may have been detected in the form of contaminants which are not naturally occurring or as elements or compounds which are above background levels or exceed the applicable investigation or screening levels.

Depending on the proposed use and the results of initial site history investigations, the assessment of a site may involve both preliminary and detailed investigations.

Many site investigations proceed in multiple stages due to the complexity of the site and the discovery of unexpected contamination, or as investigation funds become available. Site investigators should obtain and consider all site information available to minimise the number of site visits and costs associated with the mobilisation of field investigation teams.

Schedule A—Recommended general process for assessment of site contamination



Note
[1] Conceptual site model.
[2] Remediation and/or management can be considered at this point for sites with localised or low-level exceedance. Assessment of asbestos contaminated sites (in the absence of other contaminants) may proceed directly to preparation of a Site Management Plan based on the results of a reliable site history, site walkover and qualitative assessment.
The shaded area indicates activities which are outside the scope of this Measure

Schedule B—General guidelines for the assessment of site contamination

The following general guidelines provide guidance on the possible ways of achieving the desired environmental outcome (PART 3 of the Measure) for the assessment of site contamination and should only be considered in relation to the assessment of site contamination.

Index of guidelines

Appendix A2 Derivation of HILs for PAHs and Phenols
Appendix A3 Derivation of HILs for Organochlorine Pesticides
Appendix A4 Derivation of HILs for Herbicides and Other Pesticides
Appendix A5 Derivation of HILs for PCBs and PBDEs
Appendix A6 Derivation of HILs for Volatile Organic Carbon Compounds
Appendix B Equations for derivation of HILs and Interim HILs
Appendix C Derivation of HILs for Generic Land Uses
Appendix D Blood lead model assumptions
Schedule B8—Guideline on Community Engagement and Risk Communication
Schedule B9—Guideline on Competencies and Acceptance of Environmental Auditors and Related Professionals