Defence PFAS Applied Research Priority Lists

May 2019

The Defence PFAS Research Priority List and the Defence PFAS Technology Demonstration Priority List are established under the Defence Applied Research Strategy to ensure that investment in research and technology demonstration projects under the Strategy retains a focus on prioritised areas of PFAS risk management. These lists are to be updated annually or may be updated earlier at the discretion of the Delegate.

The broad categories of priority research areas may require a significant number of specialised studies. These studies may be considered to form a part of the broader priority areas.

1. Defence PFAS research priority list

Item	Need	Priority areas	Objective
1	Efficient and effective groundwater remediation	• Better prediction of PFAA transport from source zones to receptors • Identifying aquifer characteristics that control PFAA transport, e.g. organic carbon, clays, pH • Developing reliable methods for measuring key aquifer characteristics that control PFAA transport • Understanding ongoing supply of PFAAs from source zones to aquifers (see Item 2)	• Understanding the optimal siting and operational parameters for pump and treat systems to attain effective and efficient deployment of these systems in managing PFAS contamination in water • Predicting the timeframe required for effective and efficient deployment
2	Efficient and effective soil remediation	• Better prediction of PFAA transport from source zones to aquifers • Better prediction of PFAA transport from source zones to surface waters • Identifying soil characteristics that control PFAA transport, e.g. organic carbon, clays, pH	• Understanding optimal siting and operational parameters for excavation to assess against other options for the management of PFAS contamination in soil • Understanding the risks and benefits of capping and containment • Understanding the potential for off-site disposal as a remedial option

		• Developing reliable methods for measuring key soil characteristics that control PFAA transport • Occurrence and biotransformation of precursors in source zone soils • Effects of weathering/aging on PFAS partitioning to soils • Predicting leachability for waste approvals and beneficial reuse (ASLP, TCLP, TOFA, TOPA) (see also Technology Demonstration Item 3) • Chemical soil amendments (immobilisation)	• Understanding long term implications to support regulatory acceptance
3	Efficient and effective infrastructure remediation	• Better understanding of extent of PFAS contamination in concrete and bitumen • Better understanding of release rates of PFAS from concrete and bitumen • Developing methods for removal or immobilisation or destruction of PFAS in concrete and/or bitumen	• Understanding remedial options for infrastructure where operational or other factors restrict options such as removal and disposal • Understanding limitation on beneficial reuse or recycling of concrete and asphalt

2. Defence PFAS technology demonstration priority list

Item	Need	Priority areas	Objective
1	Efficient and effective mitigation of PFAS migration via surface water.	Passive technologies, including • Permeable reactive barriers • Constructed wetlands (may require further research before technology demonstration)	Demonstration of: • cost and engineering requirements when deployed at scale • effectiveness in a range of conditions for remediation of PFAS contaminated surface water
2	Efficient and effective mitigation of PFAS migration via groundwater.	Passive technologies, including: • Permeable reactive barriers • Deployment configurations such as funnel and gate v horizontal well	Demonstration of: • cost and engineering requirements when deployed at scale. • effectiveness in a range of conditions for remediation of PFAS contaminated groundwater
3	Mitigating risks from contaminated soils	• Soil washing (removal) • Thermal treatment (destruction) • Chemical soil amendments (immobilisation) • Phytoremediation by planting airfields (removal/immobilisation; may require further research before technology demonstration)	Demonstration of: • cost and engineering requirements when deployed at scale • effectiveness in a range of conditions for remediation of PFAS contaminated groundwater Providing alternatives to containment cells or off-site treatment and disposal
4	Mitigating PFAS transport via wastewater treatment plants	• Technologies that can be coupled to remove PFAS from waste water (trade waste and sewage) • Destruction of PFAS in sludge/biosolids	Demonstration of plant that would treat waste water to remove PFAS without impacting on performance for removing co-contaminants to acceptable levels
5	Mitigating risks from in situ infrastructure materials (related to Research Item 3)	• Removal, immobilisation or destruction of PFAS in concrete and/or bitumen	Demonstration of cost and engineering requirements when deployed at scale Demonstration of effectiveness for different materials and under different climatic conditions