

CONTAMINATED SITE CHARACTERISATION AND REMEDIATION (E.G. PFAS); ENVIRONMENTAL ANALYSIS OF EXPLOSIVES AND CHEMICAL WARFARE RESIDUES



Used globally at military sites, firefighting foams containing perfluoroalkyl and polyfluoroalkyl substances (PFAS) are effective at fighting jet fuel fires; however, they are extremely difficult to remediate. Using commonly available proteins, our team is pioneering research into PFAS remediation from soil and groundwater. Additionally, our geoenvironmental laboratory is equipped to detect chemicals associated with explosives and chemical warfare residues using advanced analytical equipment.

COMPETITIVE ADVANTAGE

Advanced analytical laboratory for trace chemical analysis, including:

- State-of-the-art liquid chromatography quadrupole mass spectrometer (LC-MS/MS) for trace analysis of PFAS and explosives/chemical residues
- High-temperature thermogravimetric analyser with differential scanning calorimetry (TGA/DSC)
- Gas chromatography with mass spectrometry (GC-MS) capable of evolved gas analysis from TGA-DSC
- Fourier Transform Infrared (FTIR) spectrophotometer capable of evolved gas analysis

SUCCESSFUL APPLICATIONS OF RESEARCH

- Demonstrated ability (in lab) of PFAS remediation technology using contaminated groundwater from sites around RAAF Base Williamstown
- Demonstrated laboratory thermal destruction of spent PFAS material with no deleterious gases detected
- Patented natural remediation solution for PFAS contamination

PARTNERS

- NSW Department of Industry,
- Office of the Chief Scientist and Engineer
- Australian Government: Department of Industry, Innovation and Science
- SMEC
- Elixinol Global (Hemp Foods Australia)

IMPACT

- Rapid contaminant analysis
- Hydro-geochemical modelling of contaminated sites
- Natural PFAS remediation solutions for soil, sediment and groundwater