evocra

CASE STUDY:

OCRA removes PFAS from contaminated water to below USA EPA drinking water criteria

2016

PFAS REMOVAL

EVOCRA.COM.AU

PROJECT
PFAS Removal

DATE
April 2016

MATERIAL
PFAS contaminated surface water

PRINCIPAL
Fire training facility

LOCATION
NSW, Australia

SCOPE
Utilise the OCRA process to remove poly/perfluoroalkyl substances (PFAS) from contaminated water to levels below USA EPA drinking criteria

About

Evocra works with international tier 1 engineering firms to provide turn key water treatment plants for the remediation of PFAS contaminated sites.

Evocra's new generation technology, OCRA, offers a superior PFAS treatment solution for existing and new brown field remediation projects. Working with our Tier 1 engineering partners with global reach, we have the capability to design and commission the ORCA process either into existing treatment plants or installed as a standalone treatment system.

RESULTS

The OCRA process removes >99.9% of all measured PFAS contaminants and consistently meets USA EPA drinking water criteria of <0.07µg/L PFOS and <0.07µg/L PFOA. These levels are well below Australia's enHealth interim values of 0.5µg/L PFOS and 5µg/L PFOA.

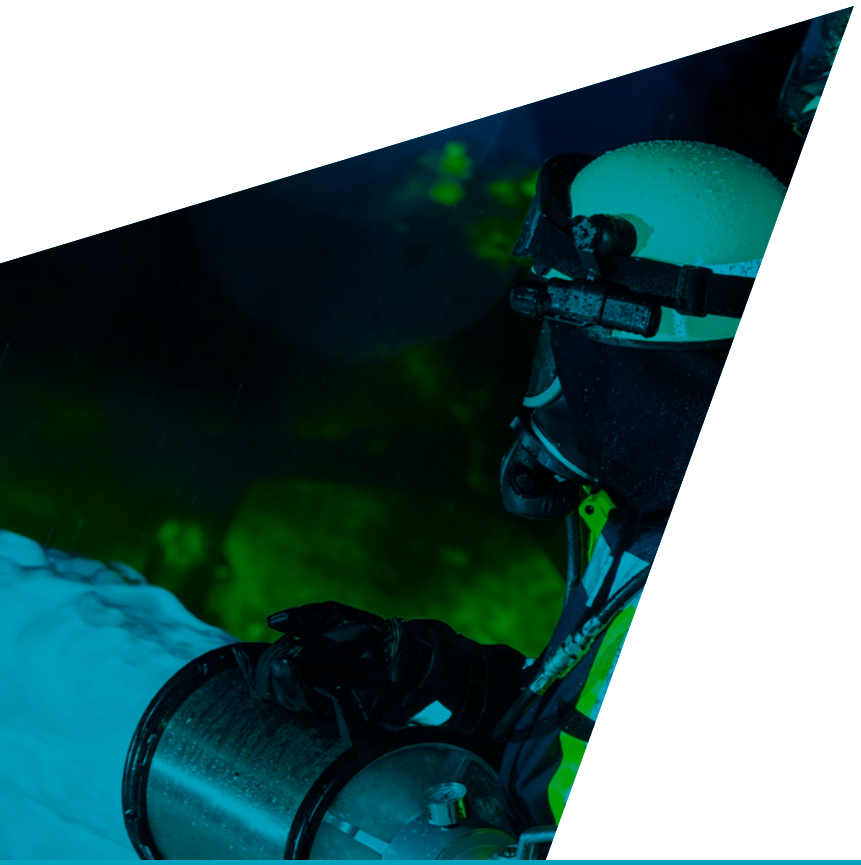
PFA SUBSTANCE	DELIVERY WATER	TREATED WATER	PERCENT REMOVAL
PFBS	1.90 µg/L	0.007 µg/L	99.63%
PFPeS	1.27 µg/L	0.002 µg/L	99.84%
PFHxS	12.5 µg/L	0.001 µg/L	99.99%
PFHpS	1.52 µg/L	0.001 µg/L	99.93%
PFOS	52.2 µg/L	0.015 µg/L	99.97%
PFPeA	2.04 µg/L	0.014 µg/L	99.31%
PFHxA	5.16 µg/L	0.011 µg/L	99.79%
PFHpA	0.70 µg/L	0.001 µg/L	99.86%
PFOA	1.24 µg/L	0.0005 µg/L	99.96%
6:2 FTS	1.89 µg/L	0.001 µg/L	99.95%
Total 28 PFAS	82.1 µg/L	0.050 µg/L	99.94%

Further process information can be provided upon request.

Issue

Historical use of PFAS in aqueous film forming foam (AFFF) and other household products has lead to PFAS contamination on a global scale. Traditional methods of PFAS remediation primarily target PFOS and PFOA through the use of absorbent media. This contaminated media then requires landfill disposal, ultimately relocating the contamination issue. Traditional methods are also adversely impacted by hydrocarbons, metals and other co-contaminations, with limited success in capturing short chain PFAS-precursors, that are now attracting growing concerns over their toxic potential.

By contrast OCRA utilises negligible absorbent materials, treats other contaminants and captures the precursors, producing a holistic remediation solution.



TECHNOLOGY

OCRA utilises micro-bubbles of ozone in a multiphase, process that extracts PFAS, including short and long chain precursors. In addition, OCRA's highly oxidising conditions and vast gas-liquid interface, readily degrade hydrocarbons to inorganic compounds and transform stable metal ions to either metal oxides or reactive ions. If required, metals ions can be readily precipitated or captured with specialist reagents.

PROCESS

An OCRA plant for PFAS utilises multistage OzoFractionation columns to remove more than 95% of contaminants from the delivery water. Residual levels of PFAS are then removed via traditional polishing processes. PFAS removed via the OCRA process is collected in a concentrated form, representing a fraction of the initial volume and ready for external destruction.

APPLICATION

OCRA can be installed as either a stand alone process or as a 'bolt- on' to an existing plant. The OCRA process is versatile, and can be implemented as a pre or post treatment to existing infrastructure so as to minimise potential disruption. OCRA plants are modular and can be scaled to meet all requirements. The design promotes low energy consumption and minimises reagent usage.