

LEGISLATIVE COUNCIL
Question On Notice

Tuesday, 15 May 2018

1312. Hon Dr Steve Thomas to the Minister for Environment

I refer to the potential contamination of soil and water by chemicals known as per and poly fluoro alkyl substances (PFAS) found in fire retardant foam, and I ask:

- (a) have these substances been discovered in soil or water in Western Australia in any additional locations since the response given to my question on Notice No 465 asked on 31 October 2017; and
(b) if yes to (a), where have they been found and in what concentrations?

Answer

(a) Yes. Since my response to Question on Notice No. 465 was tabled on 7 December 2017, per- and polyfluoroalkyl substances (PFAS) have been found in soil, surface water and/or groundwater at a number of additional sites within State jurisdiction being regulated under the *Contaminated Sites Act 2003* (CS Act).

(b) The attached table [see tabled paper no.#] lists these additional locations and provides the minimum and maximum detected concentrations for the three most commonly tested PFAS [perfluorooctane sulfonate (PFOS), perfluorooctanoic acid (PFOA) and perfluorohexane sulfonate (PFHxS)]. Many of the additional sites are current or former Department of Fire and Emergency Services (DFES) facilities and current or former waste disposal facilities.

Similar to my previous response, a brief summary of the management actions required in accordance with the CS Act is included. At several of these sites, other types of contaminants are also present; the classification and management actions consider all types of contaminants at the site.



Hon Stephen Dawson MLC
MINISTER FOR ENVIRONMENT; DISABILITY SERVICES

Additional PFAS-impacted sites regulated under the *Contaminated Sites Act 2003*

Abbreviations and symbols:

PFOS = perfluorooctane sulfonate

PFOA = perfluorooctanoic acid

PFHxS = perfluorohexane sulfonate

* = single sample/result

ND = not detected above the analytical laboratory's limit of reporting

µg/L = micrograms per litre

µg/kg = micrograms per kilogram

Location	PFAS concentration range (minimum and maximum)	Management
Waste disposal facility, 51 Stanley Road, Wellesley	Groundwater (µg/L): PFOS: not reported PFOA: not reported PFHxS: 1.98* Soil (µg/kg): No data available	<ul style="list-style-type: none"> • Classified as <i>possibly contaminated – investigation required</i>. • Investigations and monitoring ongoing. • DWER expects to receive a Mandatory Auditor's Report for this site in third quarter 2018.
Former waste disposal facility, Lots 27 and 500 Rendezvous Road, Vasse and affected land to the north	Groundwater (on site) (µg/L) : PFOS: ND to 0.0168 PFOA: ND to 0.023 PFHxS: ND to 0.0284 Groundwater (off-site affected properties) (µg/L) : PFOS: 0.02 to 0.35 PFOA: 0.021 to 0.29 PFHxS: 0.021 to 0.62	<ul style="list-style-type: none"> • Former waste disposal facility classified as <i>contaminated – remediation required</i>; affected land classified as <i>contaminated – restricted use or possibly contaminated – investigation required</i>. • Investigations and monitoring ongoing. • An accredited contaminated sites auditor is overseeing investigations.

Location	PFAS concentration range (minimum and maximum)		Management
Waste disposal facility, Lot 9005 Marmion Avenue, Tamala Park	Groundwater (µg/L): PFOS: ND to 0.013 PFOA: ND to 0.12 PFHxS: ND to 0.13	Soil (µg/kg): No data available	<ul style="list-style-type: none"> • Classified as <i>possibly contaminated – investigation required</i>. • Investigations and monitoring ongoing.
Waste disposal facility, 1094 Toodyay Road, Red Hill	Groundwater (µg/L): PFOS: ND to 0.048 PFOA: ND* PFHxS: not reported	Soil (µg/kg): No data available	<ul style="list-style-type: none"> • Classified as <i>contaminated – remediation required</i>. • Investigations and monitoring ongoing.
Former waste disposal facility, Rottneest Island	Groundwater (µg/L): PFOS: ND to 0.0017 PFOA: ND to 0.15 PFHxS: ND to 0.72 Surface water (Herschel Lake adjacent to former landfill) (µg/L): PFOS: ND to 0.0016 PFOA: ND* PFHxS: 0.0048 to 0.0148	Sediment (Herschel Lake adjacent to former landfill) (µg/kg): PFOS: ND to 0.3 PFOA: ND* PFHxS: ND to 0.3	<ul style="list-style-type: none"> • A detailed site investigation has been completed. • Investigations included sampling of nearby lakes and their sediments to establish local background concentrations. • Classified as <i>possibly contaminated – investigation required</i>. • Investigations and monitoring ongoing.
DFES O'Connor Workshops, 60 Peel Road, O'Connor and adjacent affected land	Groundwater (µg/L): PFOS: 0.07 to 50.1 PFOA: 0.01 to 1.55 PFHxS: 0.24 to 8.3	Soil (µg/kg): PFOS: 6.3 PFOA: ND PFHxS: not reported	<ul style="list-style-type: none"> • Classified as <i>possibly contaminated – investigation required</i>. • A detailed site investigation has been completed and is being reviewed by an accredited contaminated sites auditor. • Contaminated Sites Management Account grant to DFES has been approved for carrying out further investigations.

Location	PFAS concentration range (minimum and maximum)		Management
Former Belmont Fire Training Academy, 47 Hardey Road, Belmont	Groundwater (µg/L): PFOS: 17* PFOA: 0.49* PFHxS: 9.4*	Soil (µg/kg): No data available	<ul style="list-style-type: none"> • Preliminary site investigation completed. • Classified as <i>possibly contaminated – investigation required</i>. • Contaminated Sites Management Account. grant to DFES has been approved for carrying out a detailed site investigation.
Yanchep Volunteer Fire and Rescue Service Fire Station, 2 Glenrothes Crescent, Yanchep	Groundwater (µg/L): No data available	Soil (µg/kg): PFOS: 7.8 to 10 PFOA: ND* PFHxS: ND*	<ul style="list-style-type: none"> • Preliminary site investigation completed. • Classified as <i>possibly contaminated – investigation required</i>.
Former Bunbury Career Fire and Rescue Service, 32 Forrest Avenue, South Bunbury	Groundwater (µg/L): No data available Surface water (µg/L): PFOS: 0.02* PFOA: ND* PFHxS: ND*	Soil (µg/kg): PFOS: 9.1 to 16 PFOA: ND* PFHxS: ND*	<ul style="list-style-type: none"> • Preliminary site investigation completed. • Classified as <i>possibly contaminated – investigation required</i>.
Bridgetown Volunteer Fire and Rescue Service Fire Station, 175 Hampton Street, Bridgetown and adjacent land	Groundwater (µg/L): No data available	Soil (µg/kg): PFOS: 19* PFOA: ND* PFHxS: ND*	<ul style="list-style-type: none"> • Preliminary site investigation completed. • VFRS classified as <i>possibly contaminated – investigation required</i>.
Mullewa Volunteer Fire and Rescue Service Fire Station, 9 Padbury Street, Mullewa	Groundwater (µg/L): No data available	Soil (µg/kg): PFOS: ND* PFOA: ND* PFHxS: 14*	<ul style="list-style-type: none"> • Preliminary site investigation completed. • Classified as <i>possibly contaminated – investigation required</i>.
Former Broome Volunteer Fire and Rescue Service, 56 Walcott Street, Broome	Groundwater (µg/L): No data available	Soil (µg/kg): PFOS: 5.5 to 22 PFOA: ND* PFHxS: ND*	<ul style="list-style-type: none"> • Preliminary site investigation completed. • Classified as <i>possibly contaminated – investigation required</i>.

Location	PFAS concentration range (minimum and maximum)		Management
Former Bassendean Career and Volunteer Fire and Rescue Service Fire Station, 14 Parker Street, Bassendean	Groundwater (µg/L): No data available	Soil (µg/kg): PFOS: 5.6 to 29 PFOA: ND* PFHxS: ND to 10	<ul style="list-style-type: none"> • Preliminary site investigation completed. • Classified as <i>possibly contaminated</i> – investigation required.
Albany Career Fire and Rescue Service Fire Station, 77 Collie Street, Albany	Groundwater (µg/L): No data available	Soil (µg/kg): PFOS: ND to 7.9 PFOA: ND* PFHxS: ND*	<ul style="list-style-type: none"> • Preliminary site investigation completed. • Classified as <i>possibly contaminated</i> – investigation required.
Armadale Career and Volunteer Fire and Rescue Service Fire Station, 438 Green Avenue, Armadale	Groundwater (µg/L): No data available Surface water (µg/L): PFOS: 0.43* PFOA: 0.01* PFHxS: 0.05*	Soil (µg/kg): PFOS: ND to 5 PFOA: ND* PFHxS: ND*	<ul style="list-style-type: none"> • Preliminary site investigation completed. • Classified as <i>possibly contaminated</i> – investigation required.
Daglish Career Fire and Rescue Service Fire Station, 221 Stubbs Terrace, Shenton Park	Groundwater (µg/L): No data available Surface water (µg/L): PFOS: 0.07 to 0.36 PFOA: ND to 0.01 PFHxS: 0.02 to 0.09	Soil (µg/kg): PFOS: ND* PFOA: ND* PFHxS: ND*	<ul style="list-style-type: none"> • Preliminary site investigation completed. • Classified as <i>possibly contaminated</i> – investigation required.
Kalgoorlie-Boulder Career Fire and Rescue Service Fire Station, 189-201 Boulder Road, South Kalgoorlie	Groundwater (µg/L): No data available	Soil (µg/kg): PFOS: ND to 640 PFOA: ND to 320 PFHxS: ND to 130	<ul style="list-style-type: none"> • Preliminary site investigation completed. • Classified as <i>possibly contaminated</i> – investigation required.
Fremantle Career Fire and Rescue Service Fire Station, 20 Phillimore Street, Fremantle	Surface water (µg/L) : PFOS: 0.07* PFOA: 0.09* PFHxS: ND*	Soil (µg/kg): PFOS: 83* PFOA: ND* PFHxS: 14*	<ul style="list-style-type: none"> • Preliminary site investigation completed. • Classified as <i>possibly contaminated</i> – investigation required.

Location	PFAS concentration range (minimum and maximum)		Management
Former Geraldton Career Fire and Rescue Service, 59 Durlacher Street, Geraldton	Groundwater (µg/L) : No data available	Soil (µg/kg) PFOS: ND to 71 PFOA: ND* PFHxS: ND to 15	<ul style="list-style-type: none"> • Preliminary site investigation completed. • Classified as <i>possibly contaminated – investigation required.</i>
Cunderdin Volunteer Fire and Rescue Service Fire Station, 36 Lundy Avenue, Cunderdin	Groundwater (µg/L) : No data available	Soil (µg/kg): PFOS: ND to 17 PFOA: ND PFHxS: ND	<ul style="list-style-type: none"> • Preliminary site investigation completed. • Classified as <i>possibly contaminated – investigation required.</i>
Port Hedland Volunteer Fire and Rescue Service Fire Station, 1626 Coolinda Street, Port Hedland	Groundwater (µg/L): No data available	Soil (µg/kg): PFOS: ND to 12 PFOA: ND* PFHxS: ND*	<ul style="list-style-type: none"> • Preliminary site investigation completed. • Classified as <i>possibly contaminated – investigation required.</i>
Former Pillara Lead and Zinc Mine, St Georges Range, Kimberley Region	Groundwater (µg/L): PFOS: ND to 1.3 PFOA: ND to 0.3 PFHxS: ND to 1.7	Soil (µg/kg): PFOS : ND to 53.5 PFOA: ND to 5.8 PFHxS: ND to 12.1	<ul style="list-style-type: none"> • PFAS identified at the former fire-training ground within the mine site. • Classified as <i>contaminated – remediation required.</i>
Perth Stadium, 1 Roger MacKay Drive, Burswood	Groundwater (µg/L): PFOS: ND to 0.027 PFOA: ND to 0.027 PFHxS: ND to 0.011	Soil (µg/kg): No data available	<ul style="list-style-type: none"> • The stadium site is a former landfill. • Groundwater PFAS concentrations at the site appear consistent with local background levels. • Classified as <i>remediated for restricted use</i> due to contaminants other than PFAS (metals and nutrients). • Use of groundwater from superficial aquifer is restricted.
Esperance Waste Water Treatment Plant, Lot 924 Jetty Road, Chadwick	Groundwater (µg/l): PFOS: ND to 0.05 PFOA: ND to 0.02 PFHxS: ND*	Soil (µg/kg): PFOS: ND to 0.5 PFOA: ND to 4.5 PFHxS : ND to 0.6	<ul style="list-style-type: none"> • Classified as <i>possibly contaminated – investigation required.</i> • Investigations and monitoring ongoing.

Location	PFAS concentration range (minimum and maximum)		Management
Forrestfield Rail Yard, 882 Abernethy Road, High Wycombe	Groundwater (µg/l): PFOS: ND to 47 PFOA: ND to 0.17 PFHxS: ND to 2.11	Soil (µg/kg): PFOS:ND to 15 PFOA: ND PFHxS: ND	<ul style="list-style-type: none"> • Site was also listed in response to Question on Notice No. 465, and is not associated with the Forrestfield-Airport Link project. Further investigations have identified PFOS in soil. • Classified as <i>possibly contaminated – investigation required</i>. • Investigations and monitoring ongoing.