

Environmental Toxicology Research Tools



Environmental contaminants can enter ecosystems and food chains through natural routes, such as microbial production of toxic microcystins and mycotoxins, as well as industrial and agricultural activities that contribute to the release of compounds including PFAS, PPDs, dioxins, and pesticides. Cayman offers chemicals, assay kits, fit-for-purpose standards, and services to study the environmental and biological effects of synthetic and naturally occurring environmental contaminants.

Environmental Toxicants

PPDs & PPD-Qs

N,N'-Disubstituted *p*-phenylenediamines (PPDs) are used as antioxidants and antiozonants in tires and other rubber products. 6-PPD and its ozonation byproduct, 6-PPD-quinone (6-PPD-Q), which is highly toxic to certain aquatic organisms such as coho salmon, are of particular concern.

6-PPD & 6-PPD-Q

Item No.	Product Name
38246	6-PPD
38247	6-PPD-Q
45446	6-PPD-Q (CRM)
40784	6-PPD-Q-d ₅
45448	6-PPD-Q-d ₅ (solution)
40606	¹³ C ₆ -6-PPD-Q
45447	¹³ C ₆ -6-PPD-Q (solution)

6-PPD-Q Metabolites

Item No.	Product Name
42774	6-PPD-Q-4-OH
40605	<i>p</i> -hydroxy 6-PPD-Q

View all PPDs & PPD-Qs at www.caymanchem.com

Featured Product

6-PPD-Q Standards Set

Item No. 45452

The standards in this set are designed for use as reference standards for analytical testing of 6-PPD-Q in environmental samples by LC-MS using the EPA's Draft Method 1634.



Read how Cayman helped identify 6-PPD-Q-4-OH and *p*-hydroxy 6-PPD-Q, the primary metabolites of 6-PPD-Q, in collaboration with the University of Saskatchewan.

Ankley *et al. Environ. Sci. Technol.* **59**(28), 14214-14225 (2025).

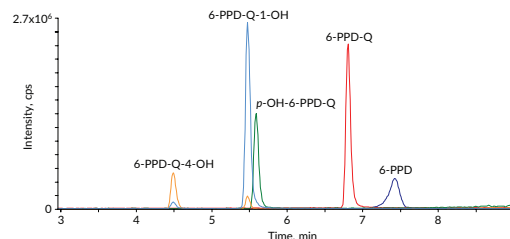
Environmental Toxicology Analysis Services

Cayman offers state-of-the-art LC-MS services to quantify environmental contaminants and metabolites in biological samples. Our methods can be adapted to include additional analytes or to analyze other types of biological or environmental samples.

Available Panels:

- **Per- and Polyfluoroalkyl Substances (PFAS):** Quantify 18 different PFAS chemicals
- **Toxic Products from Tire Antidegradants:** Quantify 6-PPD, 6-PPD-Q, and several metabolites

View panel details and explore our full range of analytical chemistry services at www.caymanchem.com/analytical-chemistry



Environmental Toxicants (cont.)

PFAS

Per- and polyfluoroalkyl substances (PFAS) are used in numerous consumer products and industrial applications, including firefighting foams. Their high stability and widespread use contribute to their pervasive presence and persistence in the environment, as well as living organisms.

Item No.	Product Name
37260	1H,1H,2H,2H-Perfluorooctanesulfonic Acid (6:2 FTSA)
37363	2-(N-Ethylperfluorooctanesulfonamido)acetic Acid (Et-PFOSA-AcOH)
37232	Pentadecafluorooctanoic Acid (PFOA)
37248	Perfluorohexanesulfonic Acid (PFHxS)
37233	Perfluorooctanesulfonic Acid (PFOS)
38156	Perfluoropropanesulfonic Acid (PFPrS)

View all PFAS at www.caymanchem.com

Pesticides

Contamination of food, water, soil, and air with pesticides can lead to acute and chronic health effects in non-target organisms, including humans and animals.

Featured Product

Pesticide Screening Library (96-Well)

Item No. 36390

For screening ~174 pesticide-associated compounds.



Pesticides

Item No.	Product Name
18466	Aldicarb*
21412	Chlorpyrifos*
23769	Diazinon*
22998	Malathion*
25786	Methyl Parathion*
38521	Paraquat (chloride)

*Isotopically labeled standard(s) also available

View all pesticides at www.caymanchem.com

Bisphenols

Bisphenol analogs are used in the manufacturing of a wide variety of consumer goods, including food packaging, as substitutes for bisphenol A (BPA), which has endocrine disrupting effects. Humans are primarily exposed to bisphenols through dietary intake.

Item No.	Product Name
9004566	2,2',6-Tribromobisphenol A
70790	BADGE
35857	Bisphenol A- β -D-Glucuronide
41889	Bisphenol F- β -D-Glucuronide
9004565	TBBPA monosulfate

View all bisphenols at www.caymanchem.com

Dioxins

Polychlorinated dibenzo-*p*-dioxins (PCDDs), polychlorinated dibenzofurans (PCDFs), and dioxin-like polychlorinated biphenyls (PCBs) are highly toxic persistent organic pollutants that can bioaccumulate. They are primarily produced by anthropogenic activities such as waste incineration, combustion events, and certain industrial processes.

Featured Product

2,3,7,8-Tetrachlorodibenzo-*p*-dioxin (TCDD)

Item No. 38392

A toxicant and an agonist of AhR.

View all dioxins at www.caymanchem.com

Heavy Metals

Toxic heavy metals and metalloids are persistent pollutants released into the environment through natural sources, such as volcanic eruptions, and anthropogenic activities including mining, industrial processes, and agriculture.

Featured Product

Heavy Metals Mixture 5 (CRM)

Item No. 41850

A CRM mixture of arsenic, cadmium, lead, mercury, and chromium.

View all heavy metal research tools at www.caymanchem.com

Natural Toxins

Microcystins

Hepatotoxic microcystins produced by cyanobacteria are primarily found in water and pose health hazards to animals and humans.

Item No.	Product Name
43503	[D-Asp ³]-Microcystin-LR
10007187	Microcystin-LA
10007188	Microcystin-LR
10007868	Microcystin-RR
43504	Microcystin-WR

Featured Product

Microcystin ELISA Kit

Item No. 502000

- Detect microcystins in various natural water samples, serum, and tissue homogenates
- Measure microcystin levels in natural water samples down to 27.4 pg/ml
- Incubation: 2 hours
- Development: 30 minutes
- Read: 450 nm

Chemical Synthesis Services

With diverse expertise in synthetic organic chemistry, isotopic labeling, and natural product isolation, Cayman's chemists can evaluate the best route to produce additional standards, pollutants, toxins, and metabolites of interest.

www.caymanchem.com/custom-synthesis

Visit our Environmental Toxicology Resource Center

Explore our full collection of research tools and services to study environmental contaminants.

www.caymanchem.com/environmental-toxicology

Marine Toxins

Marine toxins, often associated with harmful algal blooms, are produced by various species of phytoplankton, as well as other marine organisms. Many of these toxins can accumulate in shellfish or fish and pose risks to humans and animals through ingestion of contaminated seafood.

Item No.	Product Name
34801	Brevetoxin 3
10011497	Dinophysistoxin-1
21433	Domoic Acid
10011490	Okadaic Acid
14964	Tetrodotoxin (citrate)

View all marine toxins at www.caymanchem.com

Mycotoxins

Mycotoxins can cause acute and chronic health issues in humans and animals. Common exposure routes include fungal contamination of building materials, agricultural crops, and animal feed.

Featured Product

Mycotoxin Mixture 5 (CRM)

Item No. 28151

A CRM mixture of aflatoxin B₁, B₂, G₁, G₂, and ochratoxin A.

Mycotoxins

Item No.	Product Name
11428	4-deoxy Nivalenol*
11293	Aflatoxin B ₁ *
62580	Fumonisin B ₁ *
11433	Gliotoxin*
11439	Ochratoxin A*
11353	Zearalenone*

*Isotopically labeled standard(s) also available

View all mycotoxins at www.caymanchem.com

Measuring Biological Effects

Hormones & Hormone Receptors

Some environmental contaminants are considered endocrine-disrupting chemicals (EDCs). EDCs can disrupt hormone synthesis, transport, and metabolism and/or alter hormone receptor signaling. Certain organic pollutants also increase levels of the stress hormone cortisol in fish. Alterations to hormone function can result in a variety of adverse effects on reproduction, energy metabolism, the thyroid system, and stress responses.

Featured Product

Cortisol ELISA Kit (Express)

Item No. 500370

- Measure cortisol in urine, plasma, and other sample matrices
- Lower limit of detection = 20 pg/ml
- Rapid assay; get results in under 4 hours

Hormone ELISA Kits

Item No.	Product Name
582751	11-keto Testosterone ELISA Kit
501320	Corticosterone ELISA Kit
501890	Estradiol ELISA Kit
582701	Testosterone ELISA Kit

View all hormone ELISA kits at www.caymanchem.com

Hormone Receptor Cell-Based Assay Kits*

Item No.	Product Name
15750	Human Thyroid Hormone Receptor Beta Reporter Assay System
15729	Human Peroxisome Proliferator-Activated Receptor Gamma Reporter Assay System
15730	Human Peroxisome Proliferator-Activated Receptor Alpha Reporter Assay System
15739	Human Estrogen Receptors Reporter Assay Panel
28338	Rat Androgen Receptor Reporter Assay System

View all hormone receptor cell-based assay kits at www.caymanchem.com



*Manufactured by INDIGO Biosciences, Inc.

Vitellogenin: A Biomarker for Estrogenic Compounds in Aquatic Ecosystems

In aquatic ecosystems, increased levels of vitellogenin in male fish serves as a biomarker for environmental exposure to EDCs with estrogenic activity.

Vitellogenin ELISA Kits & Antibodies

Item No.	Product Name
10006943	Vitellogenin (fathead minnow) ELISA Kit
10009223	Vitellogenin (medaka) ELISA Kit
10004994	Vitellogenin (rainbow trout) ELISA Kit
10004995	Vitellogenin (zebrafish) ELISA Kit
170166	Vitellogenin (zebrafish) Monoclonal Antibody (JE-8D6)
170167	Vitellogenin (zebrafish) Monoclonal Antibody (JE-10D4)

View all vitellogenin research tools at www.caymanchem.com



Manufactured by Biosense Laboratories

Dioxins Activate the AhR

Polycyclic aromatic hydrocarbons and persistent organic pollutants, particularly dioxins, primarily exert their biological and toxic effects through activation of the aryl hydrocarbon receptor (AhR).

AhR Cell-Based Assay Kits

Item No.	Product Name
41037	Aryl Hydrocarbon Receptor Bioassay
16523	Human Aryl Hydrocarbon Receptor Reporter Assay System
36904	Mouse Aryl Hydrocarbon Receptor Reporter Assay System
28337	Rat Aryl Hydrocarbon Receptor Reporter Assay System
32576	Zebrafish Aryl Hydrocarbon Receptor Reporter Assay System



Manufactured by INDIGO Biosciences, Inc.

Bioanalysis & Assay Development Services

Our experts can analyze your samples using a variety of assay formats, including biochemical, cell-based, and immunoassays, with custom and high-throughput options available.

www.caymanchem.com/bioanalysis