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ENVIRONMENTAL STANDARDS

# Environmental Contaminant Product Standards

## 2008 New Product Guide

- Perfluorinated Compounds (PFCs)
- POPs and Pesticides
- Pharmaceutical and Personal Care Products (PPCPs)
- PCB Mixtures and Mixed Bromo/Chloro Biphenyls
- BFRs and RoHS BDE mixtures
- "Fly Ash" Reference Material
- PAHs and Industrial Compounds

# New

# 2008 New Product Guide

CIL's position as the leading supplier of isotopically labeled standards for environmental IDMS analysis is predicated on our ability to keep up with the needs of researchers in the field. This commitment requires a constant production of new and valuable products to assist researchers in the analysis of all environmental contaminants, whether "legacy" compounds, or new "emerging" analytes.

To view full product descriptions of CILs standard mixtures, please visit our website at [isotope.com](http://isotope.com), click on the "Search" button, and

enter the appropriate "Catalog Number" for the mixture you wish to review. Making sure the "contains" button in the "Search Matching" section is assigned, click on the "Search" button. A list of all items containing that product number will be shown. Clicking the "Name" of the desired item takes you to the product card, which contains an "Information File" at the bottom of the card. This pdf file contains details of the mixture, including components, concentrations, solvents, and volume.

## Priority Pollutants

We add NPYR and NMOR to our nitrosamine standard offerings as well as other Priority Pollutants commonly found in the environment. If you like wine that comes in corked bottles, you'll be happy to learn that more wine producers are testing for the presence of 2,4,6-Trichloroanisole (sometimes abbreviated TCA) in their corks.

DLM-167-1.2	Vinyl Chloride (D <sub>3</sub> , 98%) 50 ug/mL in methanol-OD	1.2 mL
DLM-1937-0.25	1,2-Dichloropropane (D <sub>6</sub> , 98%)	0.25 g
DLM-2112-1.2	1,3-Dichloro-2-propanol (D <sub>5</sub> , 98%) 1 mg/mL in methanol	1.2 mL
ULM-8092-1.2	1,3-Dichloro-2-propanol (unlabeled) 1 mg/mL in methanol	1.2 mL
DLM-4412-25	(-)-Menthol (1,2,6,6-D <sub>4</sub> , 98%)	25 mg
DLM-663-0.1	2-Butanone (1,1,1,3,3-D <sub>5</sub> , 98%)	0.1 g
DLM-8252-1.2	N-Nitrosopyrrolidine (NPYR) (D <sub>8</sub> , 98%) 1 mg/mL in methylene chloride-D <sub>2</sub>	1.2 mL
ULM-8253-1.2	N-Nitrosopyrrolidine (NPYR) (unlabeled) 1 mg/mL in methylene chloride	1.2 mL
DLM-8254-1.2	N-Nitrosomorpholine (NMOR) (D <sub>8</sub> , 98%) 1 mg/mL in methylene chloride-D <sub>2</sub>	1.2 mL
ULM-8255-1.2	N-Nitrosomorpholine (NMOR) 96% chemical purity (unlabeled) 1 mg/mL in methylene chloride	1.2 mL
ULM-2323-4X25	n-Nonane (unlabeled)	4 X 25 mL
ULM-7999-1.2	2,4,6-Trichloroanisole (unlabeled) 1 mg/mL in methanol	1.2 mL
CLM-1519-0.1	1,3-Dinitrobenzene ( <sup>13</sup> C <sub>6</sub> , 99%)	0.1 g

## Persistent Organic Pollutant Mixtures

In 2006 CIL introduced a series of calibration standards and spiking mixtures based on UNEPs list of POPs Pesticides as designated in the Stockholm Convention. The following mixtures represent our latest additions to this popular line of Pesticide standards.

ES-5399	POPS PAR Solution (unlabeled) 200 ng/mL in nonane	1.2 mL
ES-5399-10X-0.5	POPS PAR Solution (unlabeled) 2000 ng/mL in nonane	0.5 mL
ES-5400	POPS Clean-Up Spike ( <sup>13</sup> C, 99%) 200 ng/mL in nonane	1.2 mL

## Pharmaceutical and Personal Care Products (PPCPs)

The recent introduction of U.S. EPA Methods 1694 (PPCPs by LC/MS/MS) and 1698 (Steroids/Hormones by HRGC/HRMS) served notice to the environmental community that regulators have a high interest in further research on these compounds. CIL maintains an active role in the development of PPCP standards, both isotopically labeled and unlabeled, and figures prominently in these new methods. Please contact us to discuss our full line of PPCP standards, or for more information on the EPA methods.

CLM-7407-1MG	Amoxicillin:3H <sub>2</sub> O (phenyl- <sup>13</sup> C <sub>6</sub> , 99%)	1 mg
CLM-7936-1.2	DL-Estradiol (13,14,15,16,17,18- <sup>13</sup> C <sub>6</sub> , 99%) 100 ug/mL in methanol	1.2 mL
CLM-7988-A-1.2	Trimethoprim ( <sup>13</sup> C <sub>3</sub> , 99%) 50 ug/mL in methanol	1.2 mL
ULM-7989-A-1.2	Trimethoprim (unlabeled) 50 ug/mL in methanol	1.2 mL
CLM-8249-1.2	Methyl Paraben (Methyl 4-Hydroxybenzoate) (ring- <sup>13</sup> C <sub>6</sub> , 99%) 1 mg/mL in methanol	1.2 mL
ULM-8250-1.2	Methyl Paraben (methyl 4-hydroxybenzoate) (unlabeled) 1 mg/mL in methanol	1.2 mL
CLM-8285-1.2	n-Butyl Paraben (ring- <sup>13</sup> C <sub>6</sub> , 99%) 1 mg/mL in methanol	1.2 mL
ULM-8287-1.2	n-Butyl Paraben (unlabeled) 1 mg/mL in methanol	1.2 mL
DLM-6909-1.2	Progesterone (2,2,6,6,17,21,21,21-D <sub>8</sub> , 96%) 100 ug/mL in p-dioxane	1.2 mL
ULM-8219-1.2	Progesterone (unlabeled) 100 ug/mL in p-dioxane	1.2 mL
DLM-7468-1.2	Estriol (2,4-D <sub>2</sub> , 98%) 100 ug/mL in p-dioxane	1.2 mL
ULM-8218-1.2	Estriol (unlabeled) 100 ug/mL in p-dioxane	1.2 mL
DLM-8221-1.2	Gemfibrozil (2,2-dimethyl-D <sub>6</sub> , 98%) 100 ug/mL in p-dioxane	1.2 mL
ULM-8225-1.2	Gemfibrozil (unlabeled) 100 ug/mL in p-dioxane	1.2 mL
DLM-1632-1.2	Diethylene Glycol (D <sub>8</sub> , 98%) 1 mg/mL in methanol	1.2 mL
ULM-8235-1.2	Diethylene Glycol (unlabeled) 1 mg/mL in methanol	1.2 mL
ULM-8303-1.2	Benzophenone (unlabeled) 100 ug/mL in nonane	1.2 mL

### PBDE Mixtures for RoHS Analysis

The European Court of Justice (ECJ) recently annulled the exemption granted to Decabromodiphenyl ether from the EU RoHS directive, ensuring that “Deca” will remain part of the restrictions placed on the use of brominated flame retardants in electronics and electrical components. CIL has developed new calibration series and spiking solutions designed to assist researchers in detection and absolute quantification of the primary PBDE congeners found in Penta, Octa, and Deca BDE technical products.

EO-5319	CDC BFR Calibration Standard CS1-CS10 (unlabeled/ <sup>13</sup> C <sub>12</sub> , 99%) in nonane	10 X 0.2 mL
EO-5320	CDC BFR Spiking Standard ( <sup>13</sup> C <sub>12</sub> , 99%) in methanol	10 mL
EO-5402	RoHS PBDE Calibration Solutions CS1-CS5 (unlabeled/ <sup>13</sup> C <sub>12</sub> , 99%) in nonane	5 X 0.2 mL
EO-5402-CS3	RoHS PBDE Calibration Solutions CS3 (unlabeled/ <sup>13</sup> C <sub>12</sub> , 99%) in nonane	0.2 mL
EO-5403	RoHS PBDE Cleanup Spike ( <sup>13</sup> C <sub>12</sub> , 99%) in nonane	1.2 mL
EO-5404	RoHS PBDE Syringe Spike ( <sup>13</sup> C <sub>12</sub> , 99%) in nonane	1.2 mL
EO-5405	RoHS PBDE Native PAR Spike (unlabeled) in nonane	1.2 mL
EO-5425	RoHS Screening PBDE Calibration Solutions CS1-CS3 (unlabeled/ <sup>13</sup> C <sub>12</sub> , 99%)	3 x 0.2 mL
EO-5426	RoHS Screening PBDE Cleanup Spike ( <sup>13</sup> C <sub>12</sub> , 99%)	1.2 mL
EO-5427	RoHS Screening PBDE Syringe Spike ( <sup>13</sup> C <sub>12</sub> , 99%)	1.2 mL
EO-5428	RoHS Screening PBDE Native PAR Spike (unlabeled)	1.2 mL

### Brominated Flame Retardants (BFRs)

As primary degradation products of DecaBDE, Octa- and Nona- congeners are now being scrutinized more than ever. CIL has added several higher homolog PBDE congener standards to our expansive product line. And we have purified two stereoisomers of Dechlorane Plus, a High Production Volume (HPV) flame retardant chemical which has recently been found in environmental samples.

CLM-7102-1.2	Hexabromocyclododecane (mix of 3 isomers) ( <sup>13</sup> C <sub>12</sub> , 99%) 50 ug/mL in toluene	1.2 mL
CLM-7922-0.5	<i>alpha</i> -Hexabromocyclododecane ( <sup>13</sup> C <sub>12</sub> , 99%) 50 ug/mL in toluene	0.5 mL
BDE-155-CS	2,2',4,4',6,6'-HexaBDE (BDE-155) (unlabeled) 50 ug/mL in nonane	1.2 mL
EO-5337	2,2',3,3',4,4',6,6'-OctaBDE (BDE-197) ( <sup>13</sup> C <sub>12</sub> , 99%) 50 ug/mL in nonane	1.2 mL
BDE-197-CS	2,2',3,3',4,4',6,6'-OctaBDE (BDE-197) (unlabeled) 50 ug/mL in nonane	1.2 mL
EO-5377	2,2',3,4,4',5,5',6-OctaBDE (BDE-203) ( <sup>13</sup> C <sub>12</sub> , 99%) 50 ug/mL in nonane	1.2 mL
ULM-7886-1.2	Dechlorane Plus syn (unlabeled) 100 ug/mL in nonane	1.2 mL
ULM-7887-1.2	Dechlorane Plus anti (unlabeled) 100 ug/mL in nonane	1.2 mL

### Brominated Dioxin & Furan Individual Standards and Mixtures

With the increased use of BFRs in a wide range of consumer products, PBDDs and PBDFs are being detected in many matrices. CIL introduces three new suites of standards for the analysis of brominated dioxins and furans. .

EF-5266-1.2	OBDF ( <sup>13</sup> C <sub>12</sub> , 99%)	1.2 mL
EDF-5381	PBDD/F Calibration Solutions CS1-CS7 (unlabeled/ <sup>13</sup> C <sub>12</sub> , 99%)	7 X 0.2 mL
EDF-5381-CS3	PBDD/F Calibration Solution CS3 (unlabeled/ <sup>13</sup> C <sub>12</sub> , 99%)	0.2 mL
EDF-5382	PBDD/F Cleanup Spike ( <sup>13</sup> C <sub>12</sub> , 99%)	0.5 mL
EDF-5383	PBDD/F Syringe Spike Stock ( <sup>13</sup> C <sub>12</sub> , 99%)	1.2 mL
EDF-5383-4X	PBDD/F Syringe Spike Stock ( <sup>13</sup> C <sub>12</sub> , 99%)	1.2 mL
EF-5384	PBDD/F Sampling Spike Stock ( <sup>13</sup> C <sub>12</sub> , 99%)	1.2 mL
EF-5384-4X	PBDD/F Sampling Spike Stock ( <sup>13</sup> C <sub>12</sub> , 99%)	1.2 mL
EDF-5407	Bromodioxin/Furan Calibration Standard Solution (unlabeled/ <sup>13</sup> C <sub>12</sub> , 99%)	5 X 0.2 mL
EDF-5408	Bromodioxin/Furan Cleanup Spike ( <sup>13</sup> C <sub>12</sub> , 99%)	0.5 mL
EDF-5409	Bromodioxin/Furan Syringe Spike ( <sup>13</sup> C <sub>12</sub> , 99%)	1.2 mL
EF-5394	Dioxin Syringe Spike ( <sup>13</sup> C <sub>12</sub> , 99%)	1.2 mL
EF-5410	Bromodioxin/Furan Sampling Spike ( <sup>13</sup> C <sub>12</sub> , 99%)	1.2 mL

### Mixed Brominated/Chlorinated Biphenyl Individual Standards and Mixtures

CILs development of new mixed bromo/chloro biphenyl standards expands the range of analytes that can now be accurately determined in this broad category. CIL has also added new isotopically labeled surrogate/internal standards, as well as the first ever pre-formulated calibration and spiking mixtures for mixed halogenated biphenyls.

ECB-5270	3,4-Dibromo-3',4'-DiCB ( $^{13}\text{C}_{12}$ , 99%) 40 ug/mL in nonane	3 mL
PCBB-5273	3,4-Dibromo-3',4'-DiCB (unlabeled) 100 ug/mL in isooctane	1.2 mL
ECB-5271	3,4-Dibromo-3',4',5'-TriCB ( $^{13}\text{C}_{12}$ , 99%) 40 ug/mL in nonane	3 mL
PCBB-5274	3,4-Dibromo-3',4',5'-TriCB (unlabeled) 100 ug/mL in isooctane	1.2 mL
PCBB-5298	4'-Bromo-2,3,3',4,5-PentaCB (unlabeled) 100 ug/mL in isooctane	1.2 mL
PCBB-5340-CS	4'-Bromo-3,3',4,5,5'-PentaCB (unlabeled Certified Standard) 100 ug/mL in isooctane	1.2 mL
ECB-5390	PXB Calibration Solutions CS1-CS5 (unlabeled/ $^{13}\text{C}_{12}$ , 99%)	5 X 0.2 mL
ECB-5389	PXB Clean-Up Spike ( $^{13}\text{C}_{12}$ , 99%)	1.2 mL
EO-5388	PXB Syringe Standard ( $^{13}\text{C}_{12}$ , 99%)	1.2 mL
ECB-5387	PXB Native PAR Solution (unlabeled)	0.5 mL

### Fly Ash Reference Material

A Fly Ash Reference Material joins our sediment, soil, and fish tissue reference material standards. This RM has reference values for chlorinated dioxins and furans, as well as polychlorinated biphenyl congeners. Details on the analytes and their consensus values can be found at isotope.com (see page 1, "Information File Guide" for instructions).

EDF-5369	Fly Ash Reference Material	10 g
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### Industrial Chemicals

Commonly used as plasticizers, Phthalates have received added attention as potential Endocrine Disruptors in recent years. CIL introduces new standards for DEHP Metabolite V, complementing our extensive list of Phthalate mono- and di-ester standard offerings. CIL also adds new labeled and unlabeled Hexachlorodiphenyl ether standards to the list of plasticizers and other industrial chemicals.

CLM-8148-1.2	Mono-(5-Carboxy-2-Ethylpentyl)Phthalate ( $^{13}\text{C}_4$ , 99%)(DEHP Metabolite V)100 ug/mL in acetonitrile	1.2 mL
ULM-8149-1.2	Mono-(5-Carboxy-2-Ethylpentyl)Phthalate (unlabeled)(DEHP Metabolite V)100 ug/mL in acetonitrile	1.2 mL
ULM-7393-1.2	Mono-n-Pentyl Phthalate (unlabeled) 100 ug/mL in acetonitrile	1.2 mL
EO-5051	2,2',3,4,5,5'-HexaCDE ( $^{13}\text{C}_{12}$ , 99%) 50 ug/mL in nonane	1.2 mL
EO-5066	2,2',3,4,5,5'-HexaCDE (unlabeled) 50 ug/mL in nonane	1.2 mL

### Polyaromatic Hydrocarbon Standard Mixtures

As the scope of PAH analysis expands, we add to our Hydroxy-PAH metabolites and chlorinated PAH standard offerings as well as a new labeled PAH Surrogates mixture. While the source of PAHs in the environment is as old as combustion itself, new ways to monitor PAHs continue to be developed, and CIL standards evolve with these new methods.

CLM-7671-1.2	9-Hydroxyphenanthrene 95% pure ( $^{13}\text{C}_6$ , 99%) 50 ug/mL in acetonitrile	1.2 mL
ULM-7954-1.2	9-Hydroxyphenanthrene (unlabeled) 50 ug/mL in acetonitrile	1.2 mL
DLM-2005-1.2	2-Chloronaphthalene ( $\text{D}_7$ , 98%) 100 ug/mL in nonane	1.2 mL
ULM-8155-25	Benzo[c]phenanthrene (unlabeled)	25 mg
CLM-8267-1.2	1-Chloropyrene ( $^{13}\text{C}_6$ , 99%) 50 ug/mL in toluene	1.2 mL
ULM-8268-1.2	1-Chloropyrene (unlabeled) 50 ug/mL in toluene	1.2 mL
ULM-8269-1.2	9-Chloroanthracene (unlabeled) 50 ug/mL in toluene	1.2 mL
ES-5164	PAH Surrogates Standard Mixture (D, 98%) 200 ug/mL in 90% toluene/10% isooctane	10 mL

## Polychlorinated Biphenyl (PCB) Mixtures

While PCBs are considered legacy compounds in environmental testing, CIL continues to work with analytical laboratories to meet the needs of new research challenges. Recently we have added a series of PCB mixtures covering mono-deca homolog group analysis, updated mixes for modified JIS PCB methods, and developed new adaptations of the WHO-12 "Dioxin-like" PCB mixtures.

EC-5411	Predominant Mono-Deca PCBs ( $^{13}\text{C}_{12}$ , 99%) 2000 ng/mL in nonane	1.2 mL
EC-5412	Predominant Mono-Deca PCBs (unlabeled) 2000 ng/mL in isooctane	1.2 mL
EC-5414	Mono-Deca + Predominant PCB Calibration solutions CS1-CS5 (unlabeled/ $^{13}\text{C}_{12}$ , 99%)	5 X 0.2 mL
EC-5415	Mono-Deca + Predominant PCB Syringe Spike ( $^{13}\text{C}_{12}$ , 99%) in nonane	1.2 mL
EC-5418-CS0.4H	Modified JIS PCB ALT B Calibration solns CS0.4H (unlabeled/ $^{13}\text{C}_{12}$ , 99%)	0.2 mL
EC-5419	Modified JIS PCB ALT B Clean-Up Solution ( $^{13}\text{C}_{12}$ , 99%)	1.2 mL
EC-5420	Modified JIS PCB ALT B Syringe Spike ( $^{13}\text{C}_{12}$ , 99%)	1.2 mL
EC-5421-H	DL-PCB RH12 Calibration Solutions CS1H-CS5H (unlabeled/ $^{13}\text{C}_{12}$ , 99%) in nonane	5 X 0.2 mL
EC-5421-H-E	DL-PCB RH12 Extended Calibration Solutions CS0.4H-CS6H (unlabeled/ $^{13}\text{C}_{12}$ , 99%) in nonane	7 X 0.2 mL
EC-5421-CS0.4H	DL-PCB RH12 Extended Calibration Solution CS0.4H (unlabeled/ $^{13}\text{C}_{12}$ , 99%) in nonane	0.2 mL
EC-5422	DL-PCB RH12 Extraction Spike ( $^{13}\text{C}_{12}$ , 99%) in nonane	1.2 mL
EC-5423	DL-PCB RH12 Syringe Spike ( $^{13}\text{C}_{12}$ , 99%) 100 ng/mL in nonane	1.2 mL
EC-5424	DL-PCB RH12 Sampling Spike ( $^{13}\text{C}_{12}$ , 99%) 100 ng/mL in nonane	1.2 mL

## Pesticide and Pesticide Metabolite Standards

The U.S. EPA's new Method 1699 (Pesticides by HRGC/HRMS) represents the first method specifically utilizing Isotope Dilution Mass Spectrometry (IDMS) for the analysis of organochlorine, organophosphorous, triazine, and pyrethroid pesticides on a high-resolution system. The following compounds represent the latest additions to our already prolific line of pesticide standards and standard mixtures. Please contact us to discuss our full line of pesticide standards, or for more information on the EPA method.

CLM-4745-1.2	4-Hydroxybenzoic Acid (ring- $^{13}\text{C}_6$ , 99%) 1 mg/mL in methanol	1.2 mL
ULM-8251-1.2	4-Hydroxybenzoic Acid (unlabeled) 1 mg/mL in methanol	1.2 mL
ULM-6781-SA-1.2	3-Phenoxybenzoic Acid (unlabeled) 100 ug/mL in acetonitrile	1.2 mL
ULM-6575-S-10X-1.2	Diazinon (unlabeled) 1000 ug/mL in nonane	1.2 mL
ULM-7489-1.2	Chlorpyrifos (unlabeled) 100 ug/mL in nonane	1.2 mL
ULM-8122-1.2	Malathion (unlabeled) 100 ug/mL in nonane	1.2 mL
ULM-8144-1.2	Parathion (unlabeled) 100 ug/mL in nonane	1.2 mL

## Perfluorinated Compounds (PFCs)

CIL announces the addition of uniformly labeled and unlabeled Perfluorodecanoic acid (PFDA) to our growing PFC standards product line. Our fully labeled standards offer higher mass differentiation, and are rapidly becoming the norm for environmental testing. Several more PFC standards are in development at CIL, so watch for more product announcements soon. Please contact us for information about this and other perfluorinated compounds currently under development at CIL.

CLM-8172-1.2	Perfluorodecanoic Acid (PFDA) ( $^{13}\text{C}_9$ , 99%) 50 ug/mL in methanol	1.2 mL
ULM-8067-1.2	Perfluorodecanoic Acid (PFDA) (unlabeled) 50 ug/mL in methanol	1.2 mL

## Halogenated Aromatic Compounds

A native mono- through hexachlorobenzene mixture is added to the halogenated aromatic compound offerings, as well as new solutions for chlorophenols.

CLM-1804-SI-1.2	2,4,6-Trichlorophenol ( $^{13}\text{C}_6$ , 99%) 100 ug/mL in isooctane	1.2 mL
CLM-513-SI-1.2	2,4,5-Trichlorophenol ( $^{13}\text{C}_6$ , 99%) 100 ug/mL in isooctane	1.2 mL
DLM-1359-0.5	2,4-Dichlorophenol (ring- $\text{D}_3$ , 98%)	0.5 g
ES-5406	Native Mono-Hexa Chlorobenzene Solution (unlabeled) 500 ug/mL in toluene	1.2 mL