

Stage 10 Amendments to BC Contaminated Sites Regulation

A Laboratory Perspective



1. Background:

What does this mean for the environmental testing industry?

2. Revisions to Existing Standards

3. New and Emerging Compounds

4. Industry Response



What Does this Mean?

At least **1/3** of CARO's analytical work is related to the BC Contaminated Sites (CSR) regulation



Three parameter groups represent ~80% of CSR testing:

- Semivolatiles: EPH, PAH, L/HEPH (30%)
- Metals (30%)
- Volatiles: VH, BTEX, VOC (20%)
- Others: Phenols, PCB, Salt, General Parameters (20%)



British Columbia Environmental Laboratory Technical Advisory Committee

- Industry partnership with the BCMOE
- CARO involvement 10+ years
- Method authorship:
 - Prescribed: strict adherence required, e.g. SALM
 - Performance-based: deviations allowed, e.g. VH

Standardized provincial methods = laboratory alignment

Engagement :

- *LEPH/HEPH/VPH: co-reporting requirements*
- August 28 Letter to BCMOE: BCELTAC Recommendations and Comments re: Stage 10 Amendments
- *15 Recommendations*

Detection vs Reporting Limits

Method Detection Limit (MDL):

Statistically derived (best case scenario)
– *high uncertainty* (>100%)

Reporting Limit (MRL, RL, RDL):

Based on Reality (typically 2-3x MDL)
– *medium uncertainty* (<100%)

GOAL: Default RL below CSR Standard, ideally 5x lower -
allows for moisture corrections, interferences and *low uncertainty* at the concentration of the standard (<50%)

A lower MRL is not necessarily better

Why?

Based on most recent science, alignment with other jurisdictions (CCME, EPA)

1. Standard is adjusted:

- Possibly lowered: PAHs, VOCs, Metals
- Raised: Lab would likely leave method (MRL) as-is

2. Standard is redefined:

- Total Non-Chlorinated Phenols → Individual Standards
- Total PCB: Four Aroclors → Nine Aroclors
- PAH: Benzo(b)fluoranthene and Benzo(k)fluoranthene combined

Broadly defined as any synthetic or naturally occurring chemical or any microorganism that is not commonly monitored in the environment but has the potential to enter the environment and cause known or suspected adverse ecological and(or) human health effects.

Examples:

- Alkylated PAHs: C3-fluoranthenes/pyrenes
- Antimicrobials: Triclosan
- Endocrine Disruptors: Bisphenol A
- Flame Retardants: PBDEs
- Pharmaceutical and Personal Care Products



Chemical properties

- Many isomers and degradation products
- Higher solubility in water
- Ubiquitous – prone to contamination

Economics

- Expensive instrumentation & standards → costly
- Can be time consuming → higher TATs
- Lower demand → costly

Contaminated Sites vs. Environmental Monitoring

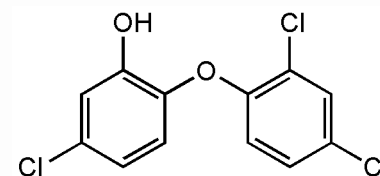


Antimicrobials (Triclosan, Triclocarban)

- Usage: antibacterial soaps, medical industry
- Problem: promote resistance to antibiotics
- Instrumentation: LC-MS/MS (0.05 µg/L) ✓

Hormones (17a-ethinylestradiol):

- Usage: contraceptive
- Problem: endocrine disruptor
- Instrumentation: LC-MS/MS (0.002 µg/L) ✓

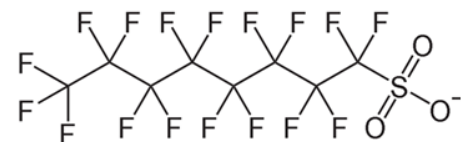


Alkylated PAHs

- Usage: none (PAH degradation products)
- Problem: bioaccumulation (worse than parent PAHs)
- Instrumentation: GC-MS (<1 µg/L) or GC-MS/MS ✓

Others:

- Perfluorinated Substances (PFOS) – LC-MS/MS
- Detergents (Nonylphenol, Octylphenol) – LC-MS/MS
- Polybrominated Diphenyl Ethers – High Resolution GC/MS



BCELTAC:

- BCMOE to provide proposed standards in Dec/Jan
- Ensure that standard is achievable by multiple labs
- May need to revise or create new provincial method

Individual Labs:

- May need to revalidate existing method
 - May validate new method(s) to meet demands
 - Will need to update their Scope of Accreditation
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