

Example Using NPEs

(Continued from September meeting)

Feeders for Substance Identification

National Chemical Management Programs

Canada

- 'CEPA toxic' under CEPA, 1999, added to CEPA 1999 Schedule 1- List of Toxic Substances in 2002

United States

- High Production Volume (HPV) Chemicals

Great Lakes Monitoring and Surveillance

- NPEs are not included in the Great Lakes Screening Project
- U.S. and Canada – numerous monitoring and surveillance efforts in the GLB.

Feeders for Substance Identification

Other Sources of Information

European Union

- European Union Directive restricts the marketing and use in Europe of products and product formulations that contain more than 0.1% of NPE (as of January 2005)

OSPAR (The Convention for the Protection of the Marine Environment of the North-East Atlantic)

- NPE is on the OSPAR List of Chemicals for Priority Action (2007)

Monitoring and Surveillance

- Numerous monitoring and surveillance data demonstrate the presence of NPEs in the GLB. For example:
 - USEPA & GLNPO are participating in numerous collaborative sampling efforts to assess the presence of APEs in the region
 - Bennie *et al.* 1997, reports concentrations in surface water (<0.020 to 10 µg/L) & sediments (<0.015 to 38 µg/g d.w.)
 - Bennett *et al.* 2000 reports APE degradation products in sediment samples near sewage treatment plants (Hamilton Harbour & Detroit River).
 - Environment Canada & Health Canada 2001, reports concentrations in Canadian freshwater, effluent and sludge from Canadian sewage treatment plants, surface waters & sediments.
 - Lee *et al.* 2002 reports NP (<0.1 to 253 µg/L) and NPE (<2 to 117,570 µg/L) in Toronto wastewater.
 - International Joint Commission, 2006 Reports concentrations in Great Lakes species; sediments & water.
 - Klecka *et al.* 2007 analyzes APE data measured in US surface waters between 1990 and 2005.

Environmental Levels and Trends

- Monitoring data includes: Bennie *et al.* 1997, reports concentrations in surface water (<0.020 to 10 µg/L) from the Laurentian GLB.
- The highest range of NPE surface water concentrations exceeds both the Canadian freshwater guideline value of 1.0 µg/L and the US fresh water four day average criteria of 6.6 µg/L.

Source/Use/Release/Exposure Information

Source/Use

- NPE used in many sectors including:
 - pulp and paper processing, paints, resins and protective coatings, oil and gas recovery, steel manufacturing, pest control products, cleaning products, degreasers and detergents, cosmetics, paints, textile processing*
- NPE available for use in Canada: 23 800 tonnes (1995), 19 000 (1996)*
- NPE production in United States: ~104 300 tonnes (in 1998), demand increasing ~2 % annually

Release

- The major route for the release of NPEs through discharge of effluents (i.e. municipal, textile).

Exposure:

- Found in: fresh water, sediment, fish and beluga whale tissue, textile mill effluents, pulp and paper mill effluents, MWWTP influents, effluents and sludges, and soil to which municipal sludges had been applied (in Canada).

*Canada has taken risk management actions to restrict use

Environmental Benchmarks

Canada

- Canadian Environmental Quality Guidelines for Nonylphenol and its Ethoxylates

| Environmental Media | Media Type | Guideline Type | Guideline Value * |
|---------------------|------------|---------------------|-------------------------------------|
| Water | Freshwater | Full | 1.0 $\mu\text{g}\cdot\text{L}^{-1}$ |
| | Marine | Interim | 0.7 $\mu\text{g}\cdot\text{L}^{-1}$ |
| Sediment ** | Freshwater | Provisional Interim | 1.4 $\text{mg}\cdot\text{kg}^{-1}$ |
| | Marine | Provisional Interim | 1.0 $\text{mg}\cdot\text{kg}^{-1}$ |

United States

- U.S. Water Quality Criteria for Nonylphenol in Fresh and Marine Water

| Environmental Media | Media Type | Guideline Value |
|---------------------|--------------|--|
| Water | Fresh water | - A four day average of 6.6 $\mu\text{g}/\text{L}$ not exceeded more than once every three years - A one hour average of 28 $\mu\text{g}/\text{L}$ not exceeded more than once every three years |
| | Marine water | - A four day average of 1.7 $\mu\text{g}/\text{L}$ not exceeded more than once every three years - A one hour average of 7.0 $\mu\text{g}/\text{L}$ not exceeded more than once every three years |

Environmental and Health Data

- 'CEPA toxic' based on CEPA 1999 64(a) – NPEs are entering the environment in a quantity or concentration or under conditions that have or may have an immediate or long-term harmful effect on the environment or its biological diversity.

Other Reasons for Concern

- Evidence from scientific journals suggests NPEs have endocrine disrupting properties. Some studies suggest that NP has weak estrogenic activity.

Summary of Environmental Considerations

- Monitoring and surveillance data indicate the presence of NPEs in the GLB.
 - NPE detected in surface water, sediments, fish, herring gulls, effluent, and sludge.
 - Water levels exceed Canadian and US benchmarks.
- Sufficient data to proceed to section III

III

Present Management Status

Canada

- There are 2 Pollution Prevention (P2) Planning notices under CEPA developed to manage risks associated with NPEs

1. NPEs contained in products

- Phase 1 sets a reduction target of 50 percent from base year levels (typically 1998), of the total mass of NP and NPEs used in the manufacturing of products or imported annually. Phase 2 sets a target of 95% reduction from base year levels of the total mass of NP and NPEs used in the manufacturing of products or imported annually.
- *Status:* In 2006, facilities reported annual reductions of 63% of nonylphenol (NP) and its ethoxylates (NPEs) used in the manufacturing of products and 81% in imports since preparing and implementing their P2 plans. Most facilities are a year ahead of schedule for meeting the first phase of reduction targets.

III

Present Management Status (*Continued*)

Canada (cont.)

- **NPEs used in the wet processing textile industry**
- Affected persons must prepare and implement a P2 plan that takes into consideration the reduction of annual use of NP and NPEs by at least 97% relative to the annual use for 1998 by 2009.
- *Status:* Textile mills surpassed the 97% reduction targets for annual use of nonylphenol and its ethoxylates.

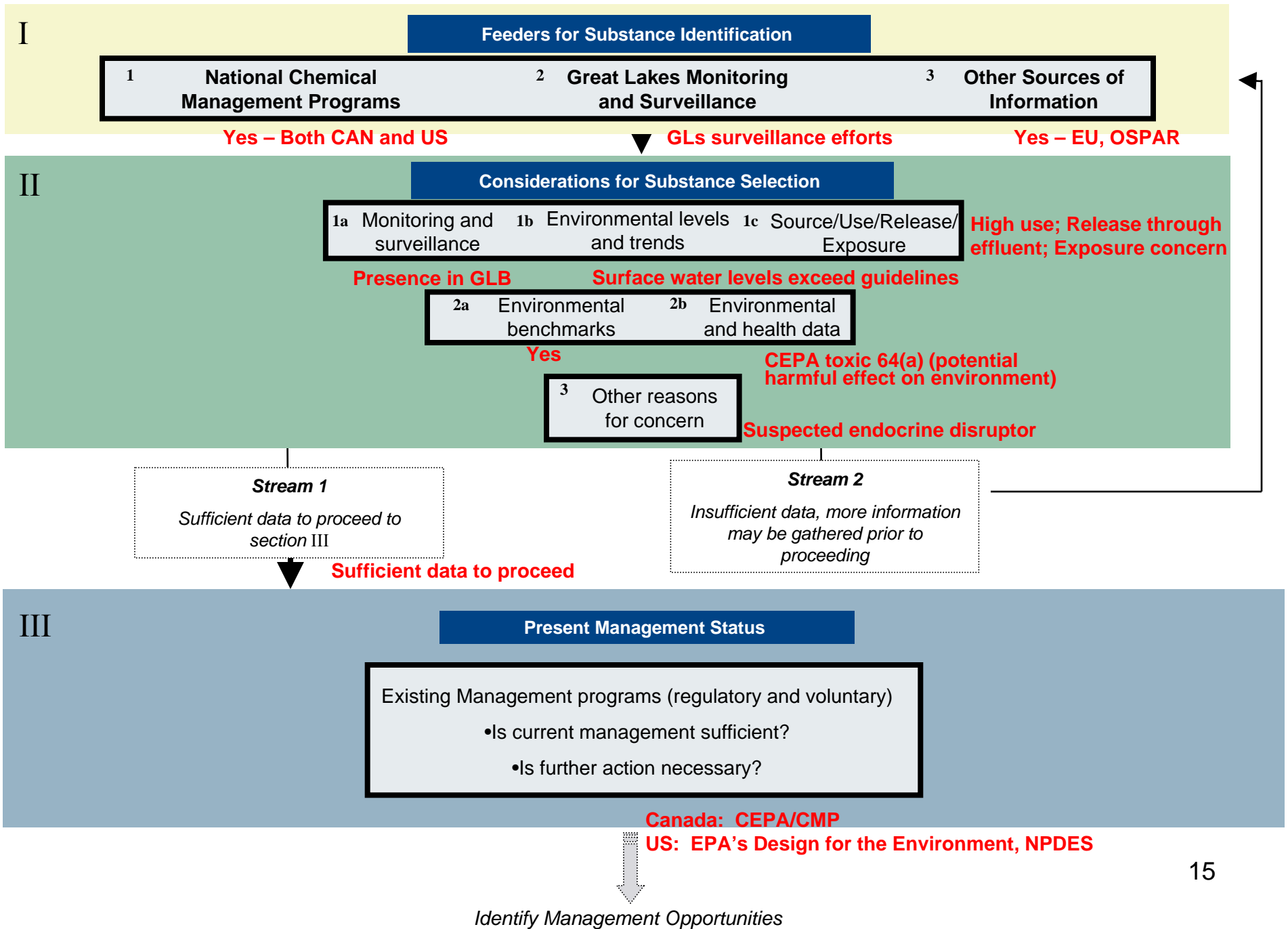
III

Present Management Status (*Continued*)

US

- US EPA's Design for the Environment Program partnered with cleaning product manufacturers and others in the design of products with a more positive health and environmental profile, Safer Detergents Stewardship Initiative SDSI, a high-level recognition program for companies who switch completely to safer surfactants.
- In June 2007, an alliance of environmental organizations petitioned EPA under TSCA to require manufacturers and importers to conduct certain health and safety studies, require labeling on all products containing NP and NPEs, and limit the use of NP and NPEs where their use presents an unreasonable risk to public health and the environment. EPA responded to the petition, granting the request to initiate a proceeding for chronic aquatic toxicity testing, and requesting comment on potential additional testing, but denied the petition's remaining requests (Federal Register / Vol. 72, No. 171 / Wednesday, September 5, 2007).
- US EPA Finalized ambient Water Quality Criteria for NP in 2006. EPA WQC provide guidelines to states for the development of state Water Quality Standards under the Clean Water Act. When monitoring indicates an exceedance of state WQS, regulatory mechanisms exist under the National Pollutant Discharge Elimination System (NPDES) to enact controls.

Binational Framework for Identifying Substances of Potential Threat to the GLB - NPE



Discussion

- Are NPEs a threat to the basin?
- Is current management sufficient?
- Is further action under the GLBTS necessary?