Canada

BCCDC Environmental Health Seminar Series - Guidance for the Characterization and Management of Public Health Risks from the Acute Release of Chemicals of Concern: Crude Oil

By Marc Lafontaine
Chemical Emergency Preparedness and Response Unit (CEPRU), Health Canada
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Purpose

- Inform you on the development of guidance documents on chemicals of concern for emergency and environmental public health practitioners
- Describe the first guidance document on crude oil
- Seek your collaboration to improve the guidance documents

Outline

- Summary of the role and capabilities of the Health Portfolio (HP) and the Chemical Emergency Preparedness and Response Unit (CEPRU) for the environmental public health consequences management of chemical incidents
- Overview and guided tour of the guidance document for the Characterization and Management of Public Health Risks from the Acute Release of Chemicals of Concern: Crude Oil
- Considerations for next steps

Overview of Health Portfolio and CEPRU's mandate for chemical emergency management

Chemical Emergency Management

- While for the most part chemical incidents are localized and fully managed by local resources, they may **escalate** to events of national or international concern whenever response capabilities are exceeded because of the size or complexity of the chemical incidents; support from all levels of government may then be required

- The federal government only becomes involved with a response when **requested** by a province, territory or an international counterpart, or when the chemical emergency is cross-jurisdictional or occurs within a federal jurisdiction

- **The HP role is to provide support (upon request) to Provinces, Territories, Federal and International counterparts to help manage the environmental public health consequences**

Chemical Emergency Management

- The HP defines a chemical emergency as an abnormal event where actual or potential human population exposure to one or more chemicals requires prompt action to save lives, reduce personal injuries, and protect and maintain public health

- Focus is on high impact **mass chemical exposure incidents** (e.g. hazmat incidents, chemical terrorism, environmental health disasters, complex or unknown contamination/exposure cases etc.)

Health Portfolio Framework for Chemical Emergency Management

- Decentralised, horizontal emergency preparedness and response model
  - Over 20 programs within Health Canada and the Public Health Agency of Canada can provide support
  - Response triggers for the activation of an Incident Management Structure
- HP Policy for chemical emergency management
- Chemical Annex of the HP Emergency Response Plan
- Training and exercises
- Outreach and collaboration
- Capacity-building initiatives with partners

Four Primary HP Support Capability Areas for Chemical Emergency Response

1. Scientific advice and risk assessment
2. Surge medical countermeasures, supplies and personnel
3. Public health advisories, alerts, and warnings
4. Surge analytical laboratory support

CEPRU Mandate

- HP focal point for the management of chemical emergencies
- Created in 2002 (post-9/11) with Public Security and Anti-Terrorism funding
- CEPRU is a small "emergency related" Unit within a large Directorate focussed on studying & researching the human health effects of environmental contaminants (chemicals & radiation)
- Mandate is to enhance HP **preparedness** and coordinate scientific and technical **response** for chemical emergencies

CEPRU Role in Preparedness

- Maintain the HP Chemical Emergency Management framework
  - Policy, response plan, SOP, guidelines and contact list
  - Knowledge repositories
  - Training and exercises
  - Partnership and coordination with stakeholders
  - Capacity-building initiatives
- Member on (and Secretariat for) national and international health security fora for chemical hazards/threats

CEPRU Role in Response

- Acts as the HP focal point for response to chemical incidents, in collaboration with key partners such as HP Regional Offices, the HP Operations Centre, Federal, Provincial/Territorial and International stakeholders
- Coordinates scientific expertise available within over 20 HP-wide programs to support the management of environmental public health consequences from chemical emergencies
- Provides 24/7 surveillance and notification via a Duty Officer system
- Mobilizes and coordinates the Chemical Situational Assessment Team (C-SAT)
- Coordinates the provision of the four primary response support capabilities

Overview of the guidance documents for the characterization and management of public health risks from the acute release of chemicals of concern

Target Audience

- Environmental public health practitioners with responsibilities for chemical emergency management

Document Use

- Across the emergency management cycle
- To assist in
  - The development of emergency preparedness plans, awareness, education and training activities
  - Design of scenarios for emergency exercises
- Complementary to response data sheets
- Promotes best freely available data sources
- Does not provide an exhaustive scan of jurisdictional or legal responsibilities

Document Structure & Style

- Six main sections, which can be consulted independently as needed
  1. Hazard Summary
  2. Health Effects
  3. Public Health Risk Management
  4. Case Studies
  5. References
  6. Annexes
- Questions and Answer (Q&A) style

Section 1: Identification & Hazard Summary

1.1 What is [chemical] & what are its commonly used identifiers?

1.2 What are [chemical]'s physical properties?

1.3 What is the flammability and reactivity of [chemical] ?

1.4 How is the presence of [chemical] identified on transport & storage containers?

1.5 What is the life cycle of [chemical] ?

1.6 What happens when [chemical] is released into the environment?

1.7 Does [chemical] have the potential to be used as a chemical warfare or terrorist agent?

Section 2: Health Effects Summary

2.1 In which chemical class does [chemical] belong?

2.2 How can acute exposure to [chemical] affect health?

2.3 What are the long-term health effects following an acute [chemical] exposure?

2.4 What are the effects of chronic or repeated [chemical] exposure?

2.5 What are the health protections standards and guidelines for [chemical] exposure?

Section 3: Public Health Risk Management

3.1 What activities can public health practitioners undertake to better prepare their community for the risk of [chemical] release?

3.2 What should be done if a sudden release of [chemical] happens in your community?

3.3 What are the immediate treatments for exposure to [chemical] ?

3.4 Is their a laboratory test to support diagnosis and treatment?

3.5 Recovery and epidemiological follow-up considerations

Section 4: Case studies

4.1 Have any major accidents involved [chemical] ?

4.2 Rail accidents involving the transportation of [chemical] in Canada and the United States

4.3 Pipeline accidents involving [chemical] in Canada and the United States

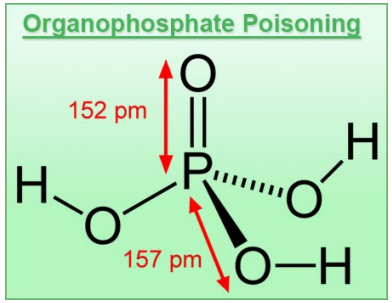
4.4 Marine [chemical] spills in Canada

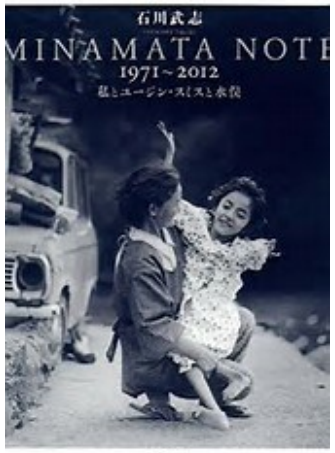
Initial Selection of Chemicals

- Hazardous chemicals that are widely produced, used and transported
- Greatest risk of mass exposure incidents from anthropogenic or natural origins
- Involved in mass release incidents
- First selection
  - Crude oil
  - Chlorine
  - Ammonia
  - Hydrogen fluoride
- Guidance on crude oil is the first one targeted to be publicly released – currently under review

Selection of Additional Chemicals

- Organophosphorus pesticide
- Hydrogen sulfide
- Hydrogen cyanide
- Phosgene
- Chemical attractive for silent release
  - Methyl/ethyl mercury
  - Lead acetate
  - Arsenic compound





Crude Oil

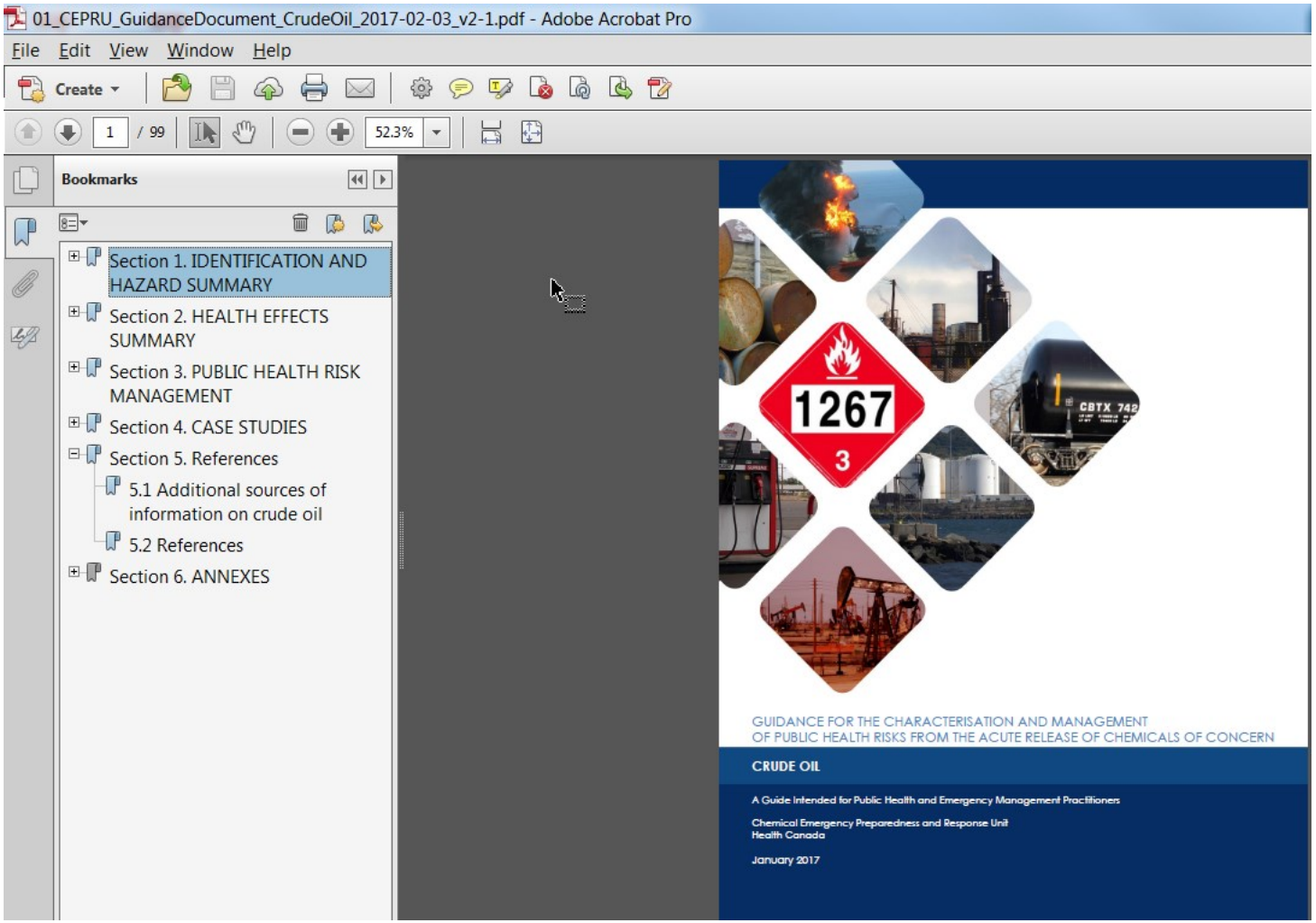
- Prime feedstock of our carbon-based economy
- Discovery and development of new oil fields (e.g., Bakken) have changed the industry
- Global market dynamics influence production
- Crude oil varies greatly in composition
  - Toxic hazardous components include benzene, ethylbenzene, toluene, xylenes, PAHs, hydrogen sulfide
- Safe transportation of crude oil is very controversial - pipelines vs rail vs marine vs no development
  - Number and severity of rail accidents
- Ongoing pipeline development projects
- Explosion and fire are the major hazards

Crude Oil Incidents

- Prudent management of incidents greatly reduces exposure to toxic components
- Physiological and psychological injuries can result
  - Requires long term care/follow-up
- Major environmental damage can result
- Epidemiological studies are ongoing
  - Prestige, Hebei Spirit and Deepwater Horizon incidents
- Accidents are primarily the result of human errors

Navigating the Guidance Document

(live demo using the document in PDF format)



Next Steps

- Crude Oil Guidance Document
  - Currently under review (review period end March 1st 2017)
  - Include considerations for First Nations and Inuits communities and the Incident Management Systems
  - French translation
  - Hope to make available on Health Canada Website (summer-fall 2017)
- Update and review of other guidance for ammonia, chlorine and hydrogen fluoride
- Draft new guidance documents based on the input of stakeholders

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