

Canadian Council of Ministers of the Environment

*Canada-wide Strategy for the
Management of
Municipal Wastewater Effluent*

Fall/Winter 2006/07
Consultation

Consultation documents

- Document for consultation
 - *Options for a Canada-wide Strategy for Managing Municipal Wastewater Effluent (with appendices)*
- Background information
 - MWWWE background paper
 - Supporting documents

All documents will be posted to CCME website at www.ccme.ca.

Presentation overview

- Goals and Overview of the CCME
Canada-wide strategy for the management of municipal wastewater effluents
- Environmental Risk Management Model
- Science and Research
- Governance
- Implementation & Timelines
- Economic Implications
- Next Steps

Goals of the strategy

- Municipalities will have certainty and clarity in how municipal wastewater effluents are managed and regulated
- Human and environmental health protection will be improved
- Financing to improve treatment of municipal wastewater effluent will be distributed in an equitable and sustainable manner

Defining wastewater

- Wastewater discharged to surface water, including marine, from a municipal or community wastewater collection or treatment facility
- Consists of end-of-pipe discharges and overflows, including combined sewer and sanitary sewer overflows
- Biosolids, separate stormwater discharges or septic tank discharges to infiltration facilities are not included

Canada-wide strategy

Performance

- National Performance Standards
- Site-specific standards

Harmonised Regulatory Framework

- Certainty & clarity to rules for owners/operators
- One-window reporting

Implementation

- New/upgraded systems are designed to meet standards at time of commissioning
- Existing systems to meet standards over time based on risk-based priorities

Economic Implications

- Economic implementation plan supports implementation of strategy

Science and Research

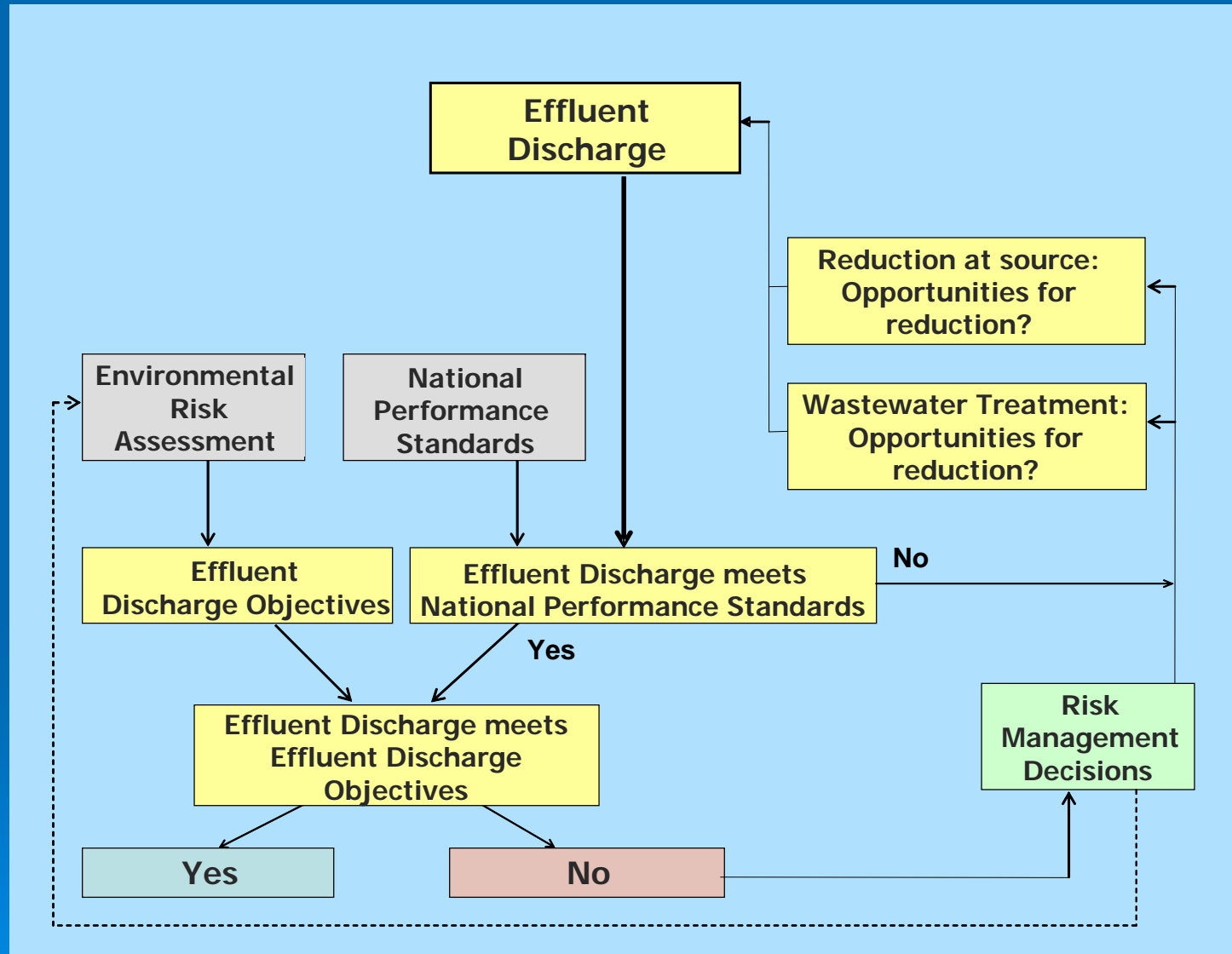
- Research priorities established and coordinated through national committee

Environmental Risk Management

Overview

- National performance standards (NPS)
- Environmental risk-based approach
- Preliminary Risk Assessment (PRA)
- Environmental risk assessment (ERA)
- Monitoring requirements
- Overflows

Environmental Risk-Based Approach – Effluent



National Performance Standards

- Apply to all facilities, with some proposed regulated exceptions
 - End-of-pipe, as periodic averages
 - CBOD₅ – 25 mg/L
 - TSS – 25 mg/L
 - TRC – 0.02 mg/L
-
- Note that National Performance Standards are minimum requirements and provincial requirements may be more stringent

Wastewater facility size categories

Wastewater facility size	Flow (m³/day)	Estimated Population
Very small	≤ 500	$\leq 1,000$
Small	$> 500 - 2,500$	$>1,000 - 5,000$
Medium	$> 2,500 - 17,500$	$>5,000 - 35,000$
Large	$>17,500 - 50,000$	$>35,000 - 100,000$
Very large	$>50,000$	$> 100,000$

Very small and small wastewater facilities which have industrial input associated with municipal wastewater effluent flows are considered as medium wastewater facilities

Canada's far north

- Addresses extreme climatic conditions
- Interim measures are proposed
 - A risk-based approach will continue to be used
 - The standards in use in current permits in the far north will be retained
 - Further research will be conducted within the next five years
 - identify the factors that affect performance of lagoons and wetlands in northern conditions
 - how lagoons and wetlands can be improved.
 - Once adequate information is available, National Performance Standards for northern conditions will be developed within 5 years

Options for proposed exceptions

- Existing discharges from very small wastewater facilities, discharges with a maximum of 50 mg/L of CBOD and/or TSS may be acceptable if an ERA indicates no significant impact to the receiving environment, there is no industrial input, and remoteness and/or climatic factors are a consideration.
- For existing discharges from very small wastewater facilities that are remote, discharge requirements are based on an ERA.

Options for proposed exceptions [cont'd]

- For existing discharges from very small and small wastewater facilities that are remote and/or discharge to a marine receiving environment, discharges with a maximum of 50 mg/L of CBOD and TSS, and 0.02 mg/L TRC may be acceptable if an ERA indicates no significant impact to the receiving environment. A waiver for marine discharges similar to that in the US is also being considered.

Feedback Questions

- Box 1 - Page 5 of Consultation Document

Options for Implementation

Option 1

- High risk facilities - comply in [5]-[10] yrs
- Medium risk facilities - comply in [10]-[20] yrs
- Low risk facilities - comply in [20]-[30] yrs

Option 2

- All comply at existing facility *end of life* (maximum [30] years)

Option 3

- No timelines until funding options are defined

Monitoring requirements

- Continuous Discharge
 - Initial characterization
 - Compliance monitoring
 - Toxicity testing
- Intermittent Discharge
 - Initial characterization
 - Compliance monitoring
 - Toxicity testing

Effluent initial characterization

➤ Monitoring frequencies – continuous discharge facilities

Facility Size	CBOD ₅ , TSS, TRC ¹ , Pathogens and Nutrients ² Monitoring Frequency	Test Series/Substance Monitoring Frequency	Acute Lethality Testing Frequency	Sub-lethal Toxicity Testing Frequency
Very Small	Monthly	n/a	n/a	n/a
Small	Monthly	n/a	Quarterly	Every 6 months
Medium	Weekly	Quarterly	Quarterly	Every 6 months
Large	Weekly	Quarterly	Quarterly	Every 6 months
Very Large	Daily (5-7 days/week)	Quarterly	Monthly	Quarterly

Effluent initial characterization

- Monitoring is for the following test groups
 - Fluoride, Nitrate, Nitrate + Nitrite
 - Ammonia
 - Dissolved Metals and Metal Hydrides, full range
 - Total Phosphorus
 - Total Suspended Solids
 - Carbonaceous BOD (5-day)
 - COD
 - Organochlorine Pesticides
 - PCBs
 - PAHs
 - Cyanide (total)
 - pH
 - Volatile Organic Compounds
 - Mercury
 - Phenolic compounds

Feedback Questions

- Box 2 & 3 - Page 8 of Consultation Document
- Box 4- Page 9 of Consultation Document

Compliance monitoring

- Monitoring frequencies for continuous discharges

Facility Size	TSS, CBOD ₅ and TRC ¹ Monitoring Frequency
Very Small	Monthly
Small	Monthly
Medium	Weekly
Large	Weekly
Very Large	Daily

Toxicity testing

- Testing frequencies for continuous discharge facilities
- Test failure requires development and implementation of Toxicity Reduction Evaluation plan to find and correct cause

Facility Size	Acute Lethality Tests	Acute Lethality Testing Frequency	Sub-lethal Toxicity Tests	Sub-lethal Toxicity Testing Frequency
Very Small	n/a	n/a	n/a	n/a
Small	n/a	n/a	n/a	n/a
Medium	-Rainbow trout - <i>Daphnia magna</i>	Quarterly	-Fathead minnow - <i>Ceriodaphnia dubia</i>	Every 6 months
Large	-Rainbow trout - <i>Daphnia magna</i>	Quarterly	-Fathead minnow - <i>Ceriodaphnia dubia</i>	Every 6 months
Very Large	-Rainbow trout - <i>Daphnia magna</i>	Monthly	-Fathead minnow - <i>Ceriodaphnia dubia</i>	Quarterly

Intermittent discharges (Lagoons)

➤ Initial characterization

- Twice during each discharge – once in the first half and once in the second half

➤ Compliance monitoring

- Once during the last half of each discharge period

➤ Toxicity testing

- Test once during the last half of each discharge period

Environmental monitoring

- Implement once in compliance with National Performance Standards and Effluent Discharge Objectives
- Confirms modeled outcomes on which EDOs were based
- Proposed options
 - Mandatory modeling by all facilities OR a subset
 - Requirements determined by each jurisdiction

Feedback Questions

- Box 5 - Page 11 of Consultation Document
- Box 6 - Page 12 of Consultation Document

Combined and sanitary sewer overflows

- Primary objective is to reduce the impact of CSO and SSO events on the environment
- Other objectives include:
 - Elimination of CSOs through combined sewer separation, where possible
 - SSOs should not occur - eliminate through corrective measures
 - No discharge upstream of designated areas
 - Other site-specific objectives may be determined by the jurisdiction

Overflow management – 4 steps

1. CSO and SSO events will be recorded.
2. National overflow standards must be achieved:
 - No new combined sewers will be constructed
 - No increase of CSO frequency due to development
 - No CSO discharge during dry weather, except during spring thaw or emergencies
 - Floatable materials will be removed
3. Owners must demonstrate that everything that can be done with existing equipment is being done to limit overflows
4. Owners must develop a long term plan to reduce CSOs and SSOs, and capture substances - based on achieving overflow objectives

Feedback Questions

- Box 7 - Page 14 of Consultation Document

Coordinated Science and Research

Science and Research Overview

- Review of science and research
- Canadian wastewater research body is recommended
 - Include a diversity of organizations
- Options for implementation include:
 - Federal-provincial-territorial committee
 - Independent committee

Focus of National Research Group

- Strengthen links between municipal wastewater effluent, health and environment
- Examine reducing harmful pollutants in surface waters Identifying and filling information gaps
- Coordinating technology research
- Addressing research needs in Canada's Far North

Functions

- Rank substances for research
- Ensure national and international linkages
- Maintain research inventories
- Assess emerging issues and identify actions
- Disseminate information
- Education
- Coordinate research and funding
- Sponsor workshops

Feedback Questions

- Box 8 - Page 16 of Consultation Document

Governance

Goals of Harmonization

- Greater regulatory predictability and clarity
- Definition of roles and responsibilities
- Avoid duplication of efforts and gaps in accountabilities

Managing sources

- Instruments include:
 - Sewer Use Bylaw
 - Federal authority such as under CEPA
 - Water management instruments

Feedback Questions

- Box 9 - Page 17 of Consultation Document

Model sewer use bylaw

- Developed in response to stakeholders suggestion in 2005
- Provides guidance to municipalities and communities in implementing source control activities
- Two options for implementation
 - Voluntary implementation OR
 - Implementation linked to funding

Managing releases

- National performance standards (CBOD, TSS, TRC) reflected in national regulation (*Fisheries Act*) and provincial licenses
- Site specific standards (e.g., EDOs)

Formal agreements

- Administrative agreements between the federal government and the provinces similar to the pulp and paper regulation under the *Fisheries Act*
 - Reflecting agreed-to national standards
 - One-window reporting
 - Coordinated approach to compliance and enforcement
- Options being developed for federal and territorial governments and water boards

Feedback Questions

- Box 10 - Page 19 of Consultation Document

Reporting

- Improve available information and communication
- Reporting to jurisdictions and the public
- Options
 - Facilities report annually to public on national performance standards and applicable EDOs
 - Facilities report annually to public on all Part A requirements
 - Facilities report annually to public on all operating license/permit requirements

Feedback Questions

- Box 11 - Page 20 of Consultation Document

Economic Implications

Overview

- Economic strategy is needed to ensure success
- To date
 - Cost template generated as a planning tool
 - Funding mechanisms examined
 - Cost-benefit analysis completed
 - Affordability issue examined
- Preliminary analysis estimates strategy to cost between \$8 and \$13 billion nationally in wastewater facility development

Economics and funding task group

- Funding and economics task group established
- Examine funding programs
- Develop options for funding strategy to ensure implementation of the Canada-wide strategy
- Results will be included in revisions to Strategy next spring

Comparative template

➤ Objective

- to identify the economic impact of upgrading from one level of MWWWE treatment to a higher level

➤ Deliverables

- Template is a tool that can be used to estimate infrastructure upgrade costs at a facility level in a consistent manner
- Costing scenarios obtained using template have been used to determine the overall cost

Affordability

➤ Objective

- Appropriately measure and consistently compare the “affordability” of a household or community to meet the requirements of the MWWWE strategy

➤ Deliverable

- Report investigates the affordability of wastewater services in relation to other utilities

Funding mechanisms

➤ Objective

- Identify funding mechanisms and evaluate their applicability to the MWW sector

➤ Deliverables

- Report outlines recommendations that can be used to improve funding activities (strategic, capital, operation and maintenance)
- Recommends options for funding programs according to community size

Feedback Questions

- Box 15 - Page 25 of Consultation Document

Implementation & Timelines

Implementation & Timelines

- Economic strategy will influence implementation
- Goal should be risk reduction
- Activities proposed over a time frame up to [20][30] years
- Review of strategy after 5 years
- Jurisdictions to develop own detailed implementation timelines and methods

Feedback Questions

- Box 12 - Page 22 & 23 of Consultation Document

Timelines – *Option 1*

- New and upgraded facilities will be designed to meet the national standards and the necessary EDOs
- For existing facilities, phased implementation of strategy
 - 0-[5] years – focus on ERAs
 - [3-5] – [5-10] years – high risk facilities meet national performance standards
 - [5-10] – [10-20] years – long-term plan to manage CSO/SSOs; medium risk facilities meet national performance standards
 - [20-30] years – low risk facilities meet national performance standards

Timelines – *Option 2*

- New and upgraded facilities will be designed to meet the national standards and the necessary EDOs.
- Existing discharge requirements continue to apply to a wastewater facility until the *end of life* of existing equipment, up to a [30]-year maximum
- Environmental risk assessment must show that immediate action is NOT necessary
- At *end of life*, the National Performance Standards will apply

Feedback Questions

- Box 13 - Page 23 of Consultation Document
- Box 14 - Page 24 of Consultation Document

Next steps

- Fall/winter 2006/07 consultation
 - Jurisdictional consultations
 - March 1st 2007 – last day for submission of comments
- Revisions to strategy considering input from consultation, Spring 2007
- Review and comment on entire package
May/June 2007
- Fall 2007 submit to CCME for approval

Questions & Discussion

Please help us shape the strategy

- Please provide comment and input on the document and its options
- Please respond to the questions for stakeholders
- Please provide any general comment
- By March 1, 2007

Contact Information

- All information is posted to the CCME website when available - www.ccme.ca
- Sign up for the CCME listserv for automatic notification of new information
- Send comments to your DC member or to the CCME Secretariat

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➤ Website Link

http://www.ccme.ca/ourwork/water.html?category_id=81#211