Industrial Non-Hazardous Waste Landfills Code of Practice
Policy Intentions Paper for Consultation

1. Introduction

The Ministry of Environment intends to establish a code of practice (minister's regulation) that addresses industrial non-hazardous waste landfills under provisions of the *Environmental Management Act* (EMA) and the *Waste Discharge Regulation* (WDR). A code of practice is a legally binding and enforceable set of rules that must be followed – the environmental protection measures and other actions that are expected of the industry by the ministry.

The proposed code of practice would apply across the entire province and can replace individually issued permits (and operating and/or closure plans) as the primary regulatory instrument for regulation of specified discharges to the environment. The initial code would address "wood waste landfills" only (see detailed discussion under section 4.1 of this intentions paper).

The development process for the code of practice consists of five phases:

1. **Scoping** – including a review of regulatory approaches in other jurisdictions and current best management practices.
2. **Policy Intentions Paper For Consultation** (intentions paper) – outlining the ministry's proposed policy intent for the code of practice/regulatory review, proposed content of the code/regulation and any outstanding issues or questions**.**
3. **Consultation** – with affected stakeholders and the general public, using the intentions paper and response forms posted on the ministry website, and other means as required.
4. **Drafting** – preparation of legal language for consideration by the Minister and/or Lieutenant Governor-in-Council.
5. **Implementation** – training of ministry staff and external stakeholders, development of best management practices.

The purpose of this intentions paper is to seek responses and comments from stakeholders and the public on the proposed code of practice. This consultation is the third phase in the code of practice development/regulatory review process.

The EMA and WDR were brought into force in July 2004. Under the legislation, introductions of waste from identified "prescribed" industries, trades, businesses, operations and activities require authorization (e.g., permit or approval) from the ministry. The WDR also contains provisions for establishing codes of practice issued by the minister as a form of authorization for specified industries, trades, businesses, operations and activities.

This intentions paper provides a summary of the ministry's mandate and objectives, background information and the contents of the proposed code of practice. Section 5 of this paper describes the avenues for providing comment as the code is developed and implemented by the ministry.

The intentions paper and response form for providing comments to the ministry, as well as further information and links to related legislation, are posted on the ministry's website. The information can be accessed by clicking on the address below, or from the Ministry of Environment homepage, by following the Environmental Protection Division and Environmental Management Branch links. See: www.env.gov.bc.ca/epdiv/ema_codes_of_practice/index.

2. Ministry and Government Goals

The Ministry of Environment provides leadership in environmental management through innovative legislation and programs, compliance activities and shared stewardship initiatives. The ministry's mandate is to protect human health and safety, and maintain and restore the diversity of native species, ecosystems and habitats. The ministry's core business areas include environmental protection, stewardship and compliance, in support of the government's goals.[1]

[1] The ministry continues to support the government's objectives under three of its five Great Goals – to lead the world in sustainable management, with the best air and water quality, and the best fisheries management, bar none; to lead the way in North America in healthy living and physical fitness; and to create more jobs per capita than anywhere else in Canada (see www.bcbudget.gov.bc.ca/2006/sp/env).

The development and enactment of the *Environmental Management Act* and its associated regulations facilitates implementation of outcome-based regulations that provide clear roles for governments and stakeholders, consistent performance standards, updated fee structures, decreased remedial and legal costs, and a greater focus on those not in compliance with regulatory requirements.

The ministry intends the *Industrial Non-Hazardous Waste Landfills Code of Practice* to provide clear, consistent and appropriate environmental protection standards for the discharge of waste from specified industry sectors to landfills.

3. Background Information

Industrial landfills regulated by the Ministry of Environment include those accepting solid waste from the logging, wood manufacturing, mining, oil and gas, pulp and newsprint, and "other industry" sectors.

The proposed code of practice would apply to those classes of industrial non-hazardous waste landfills that are specified in schedules to the code.

The ministry has reviewed environmental and human health concerns and provisions under current permits and regulations to assess common elements and degree of risk of discharges to the environment posed by these industrial landfills. Regulation under a code of practice is viewed by the ministry as appropriate in situations where requirements for protection of human health and the environment are relatively consistent (i.e., not highly site-specific) and where the risks to the environment (i.e., potential severity and likelihood of occurrence) are not high.

The ministry is proposing wood waste landfills as the initial class of landfills for regulation under the proposed code of practice, based on the number of landfills in this class (over 250 existing permits dispersed across the province) and the relative homogeneity of the waste types and management issues involved. Restricting the initial scope of the code also provides a test of the approach of the proposed code, before extending the scope of the code to other landfill classes at a subsequent time.

4. Contents of the Proposed Code

4.1 Scope of the proposed code, prohibited materials and definitions

A. Wood waste landfills

The proposed code of practice would include a schedule for one specified class of industrial landfills – "wood waste landfills." Wood waste landfills are associated with either logging operations or wood manufacturing facilities (e.g., sawmills).

Waste types to be disposed in such landfills might include:

- Wood waste from sawmills and log sort yards;
- Ash from wood residue incinerators, boilers, heaters, camp incinerators and authorized open burns;
- Dredgings of wood waste and associated sand, gravel and rock;
- Asbestos waste that has been deposited in accordance with the *Hazardous Waste Regulation*;[2] and
- Inert waste, and incidental amounts (i.e., low volume relative to the primary content of the landfill) of shop, office and food waste, for which there is no viable diversion option.

Note that wastes from pulp mills are not considered to be "wood wastes" under the proposed code of practice.

The code **would** apply to:

- All new industrial non-hazardous waste landfills (specified in a schedule of the code) that are owned and utilized by the industrial activity generating the waste being discharged;

[2] Pending amendment of the *Hazardous Waste Regulation* to include landfills specified in the *Industrial Non-Hazardous Waste Landfills Code of Practice* in the list of those non-hazardous landfills that can accept asbestos waste.

- "Significant expansions"[3] of existing permitted industrial non-hazardous waste landfills; and
- An existing landfill whose owner has chosen to register under the code.

The code **would not** apply to:

- A commercial landfill accepting waste generated by others;
- Open burning of wood waste at the landfill;
- A landfill after discharge has ceased and the landfill has been closed in accordance with the code or other regulations; or
- Existing permitted wood waste landfills (unless the owner chooses to register or the permitted landfill is "significantly expanded").

B. Prohibited materials

The following wastes would be prohibited from industrial landfills under the proposed code:

- Hazardous wastes;
- Bulk liquids and wastes which contain free liquid;
- Septage, black water, and sewage treatment residuals;
- Automobiles, white goods (e.g., stoves, fridges), other large metallic objects;[4]
- Dead animals and slaughterhouse, fish hatchery and farming wastes or cannery wastes and by-products;
- Products defined in a schedule of the *Recycling Regulation* or managed under the lead acid battery program, (except in locations where access to these programs, including by "reverse distribution"[5] is not feasible; and
- Inert, shop, office or food refuse for which there is a reasonable alternative to discharge to the landfill.

C. Definitions

Landfill would be defined in the proposed code of practice as "a facility constructed to enable waste to be discharged to ground and finally covered, primarily for permanent disposal but also for temporary storage until a better option is available."

Inert waste would be defined in the proposed code as "waste that is solid, and that, on disposal in a landfill, is not reasonably expected to undergo physical, chemical or biological changes to such an extent as to produce substances that may cause an adverse effect." [6]

4.2 Registration, notification and fees

A. Registration

The proposed code would include prescribed registration requirements, for submission to the director. This registration would be signed and submitted by an identified ***responsible person*** – i.e., a senior manager of the owner or operator of the facility associated with the landfill.[7]

The required registration content would include information on the following:

- Site investigation;
- Waste characterization (including identification of potential contaminants of concern and opportunities for reduction, reuse, recycling of, or energy recovery from, the waste);

[3] A significant expansion would be considered to be "an increase in the quantity discharged, including the horizontal or vertical expansion, that exceeds 10% of the registered capacity of the landfill as stated in the permit, or a change in the quality of the discharge material that, in the opinion of the director, has or will have a greater impact on the environment than the current operation."

[4] Except in the case where recycling options are not available or feasible, in which case such material is to be stored separately for eventual retrieval.

[5] "Reverse distribution" is where the vehicle that brings in the new product also takes out the used product.

[6] This might include: cured concrete (including embedded steel reinforcing and wood), asphaltic materials and brick and masonry that have been used for structural and construction purposes; ceramic materials; glass (that does not contain significant concentrations of lead, mercury or other toxic substances); stainless steel and aluminum; and other substances determined to be inert by the director.

[7] The proposed code of practice defines a responsible person as "the owner, or legal representative of the owner, of the landfill or, in the case of leased land, the owner or representative of the industrial operation generating the waste."

- Proposed total capacity and annual discharge rate;
- Design, operations and closure plan (including design specifications, and surface and ground water quality objectives);
- Confirmation that required persons were notified of the registration application; and
- Confirmation of registration of the landfill on the property title.

These requirements are discussed in further detail in subsequent sections of this intentions paper.

B. Notification prior to registration

Under the proposed code, at least 90 days prior to submission of a registration for a new landfill and at least 30 days prior to the registration of an existing landfill, the responsible person would be required to inform local governments within whose boundary the proposed landfill will be located.

C. Annual fees

Provisions for annual fees for industrial non-hazardous waste landfills are set out in section 9 and schedule 3 of the *Waste Discharge Regulation*.

4.3 Required information

The proposed code of practice specifies ***desired performance outcomes*** for the protection of human health and the environment in relation to specified aspects of landfill siting, design, operation and closure. The responsible person submitting registration information to the director would be required to identify in the Design, Operations and Closure Plan (DOCP) how all relevant activities of landfill siting, design, operation, monitoring and closure have achieved or will achieve these performance outcomes.

The proposed code also specifies elements for which a ***qualified professional*** [8] is required.

A. Site investigation

Prior to construction or significant expansion of a landfill, the proposed code would require that a qualified professional prepare an assessment of the climatic, geological and hydrogeological conditions specific to the landfill and surrounding area – and provide the assessment to the responsible individual for inclusion in the registration package.

The responsible individual would also be required to ensure that any new landfill is sited with sufficient buffers, and with sufficient distances from the landfill boundary to sensitive areas or activities, to protect public health and the environment.

B. Waste characterization

The responsible individual would be required to submit with the registration package a characterization of the waste to be discharged that includes:

- Documentation of waste types and estimated total amounts of each type of waste that will be discharged annually;
- Physical and chemical properties of the wastes intended for discharge to the landfill, including: density, moisture content, particle sizes, compressibility and strength; and pH, corrosiveness, reactivity, volatility, leachability and flammability;
- Analytical results of representative waste samples for concentrations of various chemical constituents that might be ***potential contaminants of concern*** (PCOC) (including total concentrations and leachable concentrations for relevant contaminants, based on knowledge of the waste type and comparison to the soil and ground water objectives appropriate for the facility) – and recommendations for PCOC that will be included in the monitoring program for the landfill; and
- Identification and assessment of opportunities for reduction, reuse, and recycling of or energy recovery from the waste.

[8] A qualified professional is defined as "a person who: a) is registered in British Columbia with his or her appropriate professional association, acts under that association's code of ethics, and is subject to disciplinary action by the professional association; and b) through suitable education, experience, accreditation and knowledge may be reasonably relied on to provide advice within his or her area of experience as it relates to this code of practice."

C. Community engagement

Appropriate means and methods of community engagement would be identified and discussed in best management practices developed to support the code of practice (see section 4.7 below).

D. First Nations consultation

Information concerning consultation with First Nations will be developed in accordance with ministry policy and government direction, as well as legal requirements.

E. Design and construction requirements

The proposed code would require that the responsible person ensure that the landfill is designed to minimize[9] potential impacts from landfill operations on human health and the environment, and be compatible with the site and waste characteristics. He or she would also be required to ensure that the landfill is constructed in accordance with plans and specifications prepared and approved by a qualified professional. These plans and specifications would address the design, construction, operation and closure of a new (or significant expansion of an existing) landfill.

Design and construction requirements would include:

- ***Surface water quality protection*** – so that water flowing onto the landfill footprint is diverted from contact with discharged water, infiltration of surface water generated on the landfill footprint is minimized, and any surface water that has come into contact with discharged waste can be treated to prevent pollution of ground or surface water;
- ***Ground water quality protection*** – so that ground water quality at monitoring system points of attainment meets the generic numerical water quality objectives appropriate for the facility and, if the landfill is located close to a provincially mapped and classified Level A aquifer,[10] protects the quality of water in the aquifer;
- ***Ground water quality monitoring*** – program prepared and approved by a qualified professional that: is appropriate for the risk to ground water quality from the landfill; satisfies the monitoring well requirements in the *Ground Water Protection Regulation*; is capable of detecting changes in ground water quality resulting from the landfill; specifies the points of attainment of a network of ground water wells and well locations; specifies the water quality parameters to be measured and the sampling frequency; outlines the process to be followed in the event that a potential contaminant of concern is detected at a concentration above the applicable water quality objective; recommends the gas monitoring frequency (if relevant); and is available for review by the director when required;

Ground water quality monitoring network

The code will require a ground water quality monitoring network that is appropriate in terms of number and location for the volume and characteristics of the waste to be accepted at the landfill (including potential contaminants of concern), the location and expansion of the landfill and adjacent land uses, ground water uses and surface water receptors, the hydrogeology of the area where the landfill is located (including all unconfined aquifers underlying the landfill), and detecting ground water flow direction, horizontal and vertical gradient and velocity.

- ***Surface water quality monitoring –*** program prepared and approved by a qualified professional, appropriate for the risk to surface water quality from the landfill, that: is capable of detecting changes in surface water quality in watercourses and springs resulting from the landfill; specifies the points of attainment in terms of a network of surface water monitoring locations that is appropriate in terms of number and location; specifies the water parameters to be measured and the sampling frequency; outlines the process to be followed in the event that a potential contaminant of concern is detected at a concentration above the applicable water quality objective; and is available for review by the director when required;

[9] Minimize is defined in the proposed code as "reduce to the extent practical."

[10] See additional information on aquifers at the Ministry of Environment website: www.env.gov.bc.ca/wat/aquifers/index and the Guide to Using BC Aquifer Classification Maps at: www.env.gov.bc.ca/wat/aquifers/reports/pdfs/aquifer_maps.pdf

Surface water quality monitoring network

The code would require a surface water quality monitoring network that is appropriate in terms of number and location for the volume and characteristics of the waste to be accepted at the landfill (including potential contaminants of concern), the nature of surface water in the vicinity of the landfill, and the location of the landfill and adjacent land and water uses.

- ***Landfill gas management*** **–** determination by the qualified professional whether landfill gas will be generated in sufficient quantity or toxicity to pose a risk to human health or the environment, and landfill design to minimize any identified risk (note that the director may also require a landfill gas assessment study at any time during the operation of the landfill to determine whether landfill gas is being generated in sufficient quantity or toxicity to pose a risk to human health or the environment[11]); and
- ***Additional monitoring*** **–** (such as additional ground water or surface water monitoring stations, or different sampling parameters or frequency) as required by the director (by notice to the responsible person in writing), where in the director's opinion the changes are necessary.

F. Operating requirements

The proposed code sets out provisions for a landfill ***operations plan*** that describes how the landfill will be operated in order to be consistent with the landfill design, and meet all relevant performance requirements, including (where relevant):

- Operational procedures such as waste control, intermediate soil cover, surface water management and nuisance controls;
- Procedures and policies for waste diversion and acceptance, and detecting and preventing the discharge of hazardous wastes and other prohibited wastes at the landfill;
- An emergency response program, covering fires, releases and medical concerns;
- A remediation program to be implemented if ground water or surface quality performance objectives are not met; and
- A plan for the monitoring and management of landfill gas, which may include detection, interception, venting or recovery.

The landfill operator would be required to ensure that (where relevant): discharged waste is contained; dust, odour and other effects from facility operations do not become a nuisance or hazard to the health of persons or the environment outside the boundary of the facility; the movement of litter beyond the property boundary is minimized; disease vectors are minimized; and access by wildlife is controlled.

Operational requirements set out in the proposed code would also address:

- ***Surface water diversion*** – so that the amount of water flowing onto the site that comes into contact with the discharged waste is minimized;
- ***Leachate and contaminated water treatment and discharge*** – so that any leachate or contaminated surface water discharged to the receiving environment meets the water quality objectives appropriate to the receiving environment at outer boundary of the initial dilution zone and any ground water monitoring points of attainment specified in the design operations and closure plan;
- ***Fire control*** – requiring that a fire in or adjacent to discharged waste is extinguished immediately upon detection, and, if a fire burning in a landfill cannot be extinguished within 30 days of detection, the site is excavated as needed to extinguish the fire and then reconstructed with measures sufficient to prevent a similar occurrence; and
- ***Compaction and intermediate cover*** – so that disposed waste is compacted and covered with soil, or an alternative material, to a depth and at a frequency appropriate for the disposed material, and climate; and sufficient to control disease vectors, access by wildlife, fires, nuisance odours, litter and dust.

[11] Based on the results of that study, the director may further require that a landfill gas management system be constructed and maintained.

G. Closure requirements

The proposed code would require the responsible individual to submit a ***closure plan*** to the director on registration. This plan would include: the final design elevation, upon achievement of which no further waste discharge is authorized; the design of the final slope and cover of the landfill; provision for giving at least three months written notice to the director of the intent to close the landfill; and the maximum periods following final discharge of waste before implementation of the closure plan is begun and ended.

The code would require the final cover for the landfill (or cell of the landfill) to: be appropriate for the waste in the landfill and site characteristics (including but not limited to climate); minimize infiltration if the landfill does not have a liner and leachate collection and treatment system (or equivalent *in situ* ground water protection); ensure that water runs off the landfill and erosion is minimized; and support revegetation.

Prior to the date of final discharge, a qualified professional would be required to review the closure plan and recommend any changes (including those that might increase or decrease the cost of closure) to the responsible person. The responsible person would have to notify the director before implementing the closure plan (inclusive of any changes resulting from the review by the qualified professional).

The responsible person would be required to ensure that the landfill (or part thereof) is closed in accordance with the submitted closure plan. He or she would notify the director in writing following final closure of the landfill that the closure has been completed in compliance with the closure plan, a closure report has been completed and placed in the facility record, and the closure report was prepared and approved by a qualified professional. The closure report would be required to contain:

- A description of the final cover system;
- An estimate of the maximum quantity of wastes deposited on site over the active life of the landfill; and
- A description of how drainage restoration, soil replacement, final cover slopes, erosion control, and revegetation and conditioning of the site have been dealt with.

4.4 Financial security and post-closure monitoring

Protection of the environment and human health requires appropriate operation, closure and post-closure monitoring of industrial landfills. In the event that the landfill owner is unable to carry out such activities, the ministry may be required to undertake actions to protect the environment from impacts associated with an industrial landfill. The ministry is intending to require such security as part of registration for a landfill.

The appropriate amount and method of administering such a requirement have not yet been identified, as provincial government policy regarding financial security requirements for landfills and other industrial sites is currently under review.

Post-closure monitoring and management is another aspect of industrial landfills that is of import to human health and the environment. At present, there is no authority under the *Environmental Management Act* for regulation of activities following cessation of the discharge through a code of practice. The ministry is seeking comment regarding issues of concern for protection of human health and the environment following closure of industrial landfills.

4.5 Record keeping and reporting

The proposed code would require establishment and maintenance of records for a landfill, available to the director within 48 hours of written request. Required records would include: a copy of the registration number of the landfill; the waste characterization and site investigation information; the current version of the design, operations and closure plan; records of the handling of any wastes accepted at the landfill; and the landfill closure report.

The responsible person would also be required to prepare an ***annual report*** for the landfill for each calendar year (from January 1st to December 31st) of operations, to be placed in the landfill operating record before March 31st of the following year and made available to the director within 48 hours of a written request. The annual report would contain (at minimum):

- Information on the types and volumes of wastes disposed of at the landfill in the preceding year, and the locations of disposal of wastes requiring special handling; and
- Environmental monitoring records (and their interpretation) for ground water and surface water monitoring, gas monitoring, the quality of leachate discharged to the environment, and any remedial actions taken related to monitoring and leachate discharge information.

4.6 Preventing and reporting emergency events – powers of the director

The code would contain requirements for preventing and reporting emergency events in order to protect the environment and human health. The responsible person would be required to ensure that pollution control works associated with the landfill are regularly inspected and maintained in good working order. In the event of an emergency or condition beyond the control of the responsible person that prevents effective operation of the pollution control works, immediate notification of the Regional Manager, Environmental Protection, and appropriate remedial action would be required.

To protect the environment, the director would be able to reduce or suspend the operation of the landfill until approved methods of pollution control have been restored. The director could also specify additional emergency reporting requirements, as well as require the responsible person to provide a written report of any or all emergency events and subsequent actions on the part of the responsible person.

4.7 Best management practices

The proposed code of practice would be supported by best management practices (BMPs) that would provide recommendations or options related to meeting or achieving the requirements of the proposed code of practice. The BMPs would be developed jointly by the ministry working with other stakeholders, and would reflect, to the extent possible, existing BMPs developed by or for the involved industry sectors. BMPs would not have the force of law but should be viewed as assistance to persons governed by a code of practice in meeting their legal obligations.

4.8 Assuring compliance

A. Compliance promotion

The ministry will develop a strategy for the promotion of voluntary compliance with the requirements of this code of practice, in cooperation with industry association and other interests. Compliance promotion may entail training for ministry staff, as well as information and education for the industry sector.

B. Compliance verification

The ministry's approach to inspections and audits will involve regular and random compliance audits and inspections, in accord with the ministry's compliance strategy and in response to identified or potential issues or concerns regarding protection of the environment or human health.

The ministry is committed to utilizing the compliance verification data to guide the ongoing management of the sector and assure the goals for environmental protection are being met.

C. Enforcement

The ministry response to non-compliance will entail written advisories and warnings, directives and prosecutions. The choice of response will be based on standard ministry-wide policy, the compliance history for the industry and the significance of the impact from the non-compliance occurrence.

5. Providing Comment on the Proposed Code of Practice

The ministry is intending to develop the *Industrial Non-Hazardous Waste Landfills Code of Practice* through 2006. Comments regarding the proposed intentions of the ministry are being solicited and will be carefully considered in the review and revision process. The ministry welcomes all suggestions with respect to any aspect of the proposed code of practice.

Submissions will be compiled and summarized, without specific attribution, by an independent contractor and the summary posted on the ministry website. Following review of comments and submissions, the ministry will complete legal drafting of the code of practice for legislative review and implementation.

This intentions paper and a response form with questions based on the proposed code of practice have been posted on the ministry's web site: www.env.gov.bc.ca/epdiv/ema_codes_of_practice/index..

Those interested are invited to submit comments using the instructions and questions provided on the response form. Individuals or organizations may also make written submissions to the ministry without following the format set out in the response form – as desired.

Comments to the ministry should be made on or before June 30th, 2006.

All submissions will be reviewed for inclusion in a consultation summary report. Comments received will be treated with confidentiality by ministry staff and contractors when preparing consultation reports. Please note that comments you provide and information that identifies you as the source of those comments may be publicly available if a Freedom of Information request is made under the *Freedom of Information and Protection of Privacy Act*.

If you have any questions or comments regarding the consultation process, review the information posted on the ministry website, or contact Cindy Bertram of C. Rankin & Associates, who has been contracted to manage consultation comments, at:

Email: cindybertram@shaw.ca

Mail: PO Box 5293
Victoria, B.C. V8R 6N4

Fax: (250) 598-9948

Thank you for your time and comments!