

# Beneficial Use of Waste

## ACCEPTABLE INDUSTRY PRACTICES

May 2012

This policy document identifies issues and provides guidance when making decisions on the beneficial use of products derived from wastes including contaminated soils, sands, gravels, or inert wastes.

### Waste Management Alternatives

In Alberta, waste is legally defined as any substance intended to be disposed of, with or without prior storage or treatment [Waste Control Regulation (WCR), section 1(II)]. Excavated contaminated soils (CS) going for disposal are also dealt with as waste. Waste must be disposed of at waste management facilities or as otherwise authorized in writing by the Director (Environmental Protection and Enhancement Act, section 176). The WCR identifies some exemptions, one of which applies to inert waste used in reclamation.

The Director's discretionary decision-making allows for alternative disposal or use of specific wastes other than at a "waste management facility". Factors tailored in the Director's decision are the protection of human health and the environment, nature and quantity of the waste, remoteness of the location, availability of facilities, and the liability associated with the proposed alternatives.

### Beneficial Use of Wastes

The authority mentioned above is also used when the Director is asked to decide or provide recommendations on the management of waste as a resource, in particular, the use of inert wastes or products derived from wastes including contaminated soils. This happens when a substance used to be handled as waste and disposed of is no longer managed as such but is used instead as a resource or product intended for specific *beneficial uses*.

When this intention is declared it should be reflected in Material Safety Data Sheet (MSDS) developed for the product-derived from waste. This MSDS must identify the product's physical, chemical, biological, and toxic characteristics; classify the product; identify intended uses; include procedures and precautions to respect during its use; and how to manage it, should it become a waste again (i.e., intended to be disposed of). When all this happens, we are no longer dealing with a waste but rather with a product-derived from waste that should, like any other product, meet the quality required by the intended use.

### Wastes versus Recyclables

Alberta's legislation encourages the management of wastes as resources by clearly making a distinction between "waste" and "recyclable". As mentioned above, waste is mostly disposed of (into landfills or deepwells) with or without prior storage or treatment. On the other hand, the Alberta definitions for "recycle" and "recyclables" are clearly associated with sound management that includes beneficial use supported by a MSDS for the recycled product, as needed. Once this distinction is made it is essential to keep it along the overall management process as different rules apply to wastes and products and there is a need to minimize environmental liability.

### Quality of Products Derived from Waste

The quality required from products derived from waste is case-specific and conditioned by the nature of the waste, contaminants present, intended use, processing needed, precautions, procedures, quality control, performance evaluation, and record keeping. As part of the assessment process, potential uses and environmental or health impacts of products derived from waste have to be clearly identified. The findings – physical, chemical and biological characteristics, uses, precautions, and disposal options – should all be described in the applicable MSDS.

Material Safety Data Sheets (MSDS) must be developed by the person responsible to notify the user of any hazards or limitations on use.

Copies of Alberta's Acts, Regulations, and Codes of Practice are available from the Queen's Printer at [www.qp.alberta.ca](http://www.qp.alberta.ca)

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The MSDS for the product is developed to ensure not only its proper use, but also to remove the stigma associated with waste.

In particular, no waste or CS should be applied to roads, or incorporated into products or surface soils on the basis of dilution as a cheap disposal alternative.

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A good example of re-using wastes is sulfur. Once considered a waste by-product from the oil and gas industry it is, for long time, recognized as a valuable product used mostly as feedstock by the fertilizer industry. Other examples are: bottom and fly ash from coal power plants, mechanical pulp mill sludges, lime sludges from acetylene production, reclaimed asphalt pavement (RAP), phosphogypsum, and certain contaminated soils, etc.

### Waste and Product Assessment

Representative samples of the original waste or contaminated soils (CS) shall be obtained and tested by the person responsible for the waste or CS to assist in the processing, if needed, and ensure that the quality required by the user is met. The MSDS for the product is developed to ensure not only its proper use, but also to remove the stigma associated with waste or CS and perceived associated liability.

The liability of products derived from wastes/CS should be no different from the liability associated with the use of products they replace.

### Criteria and Tests

It is not acceptable or correct to use the Alberta Tier 1 Soil and Groundwater Remediation Guidelines criteria to decide on waste acceptance at landfills, the quality of products derived from wastes/CS, the application rates to land of pulp mill sludges or drilling muds, or the suitability of using CS as backfill material at pristine industrial sites.

The *Alberta Tier 1 Soil and Groundwater Remediation Guidelines*, should NOT be used in assessing

- the performance of technologies used in waste treatment, or
- the quality of *products derived from waste* mostly when it involves CS.

The continued misuse of the soil quality remediation criteria is a license to pollute pristine soils up to "acceptable limits" for the contaminants present and an aberration in sound waste management or when using products derived from waste.

A closely associated problem is the broad use of dilution as a solution to pollution as an alternative to waste or CS management. In particular, no waste or CS should be applied to roads, or incorporated into products or surface soils on the basis of dilution as a cheap disposal alternative.

### Analytical Tests

Detailed analytical protocols for wastes, CS, and products derived from waste are case specific and not detailed in this document. For information we mention here the key components of an analytical protocol applied to use of CCA affected soil and gravels intended to be used as road aggregate. CCA is an acronym for copper/chromium/arsenic-based wood preservative. In addition to the geotechnical suitability of the material as an aggregate, there is a need for testing these materials for the contaminants present and their availability to the environment by determining the total and leachable concentrations of metals including copper, chromium, and arsenic.

By comparing the results obtained with similar data from a material taken as a reference, additional possible treatment and testing might be defined and pursued before a suitable aggregate derived from the CS is produced. Finally, the person responsible has to assess the performance of the treatment process needs up front by conducting the appropriate tests, as required, including useful TCLP leachability tests on representative samples of the treated CS.

A similar approach is followed for other products derived from wastes or the so-called "inert wastes" (i.e., asphalt, concrete, gypsum, drill cuttings or produced sand) that may be good substitutes of virgin materials used in construction, land reclamation, etc

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### Synopsis

**Products derived from waste** are designed to meet a specific use and are characterized by well defined physical, chemical, or biological characteristics that meet specific quality criteria and documented on specific MSDSs developed for that purpose. The required specifications cannot be achieved through misuse or remediation criteria or dilution. Otherwise, we are not dealing with products but rather mismanaging wastes as an alternative to sound disposal and thus clearly in contravention of Alberta's environmental legislation, specifically, the Waste Control Regulation.

**It is critical to respect acceptable industry practices, including the proper characterization and classification of the waste or CS and the development of the applicable MSDS.**

**Is it a waste, or is it a recyclable, or is it a product?** Once a decision has been made it is critical to differentiate between waste, recyclable and product as different regulatory requirements apply. To add to the challenge, different agencies use may use different definitions for wastes or recyclables. One of Alberta Environment and Sustainable Resource Development's drivers is to minimize regulatory intervention and continued testing when using wastes as resources. Though recognizing that the beneficial use of wastes should not be hindered by unnecessary testing, it is critical to respect acceptable industry practices including the proper characterization and classification of the waste or CS and the development of the applicable MSDS. The person responsible is responsible for these tasks which shall be designed as dictated by the nature and characteristics of the waste/CS, its intended use, and applicable legislation.