Follow Up on the Final Decision on the Assessment of Releases of Used Crankcase Oils to the Environment

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Environment Canada

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1 Issue

1.1 Background on Used Crankcase Oils

Used Crankcase Oils (UCOs) was listed on the first Priority Substances List (PSL1). In the 1994 *Priority Substances List Assessment Report, Waste Crankcase Oils*, there was insufficient information to conclude whether UCOs constituted a danger to the environment under Paragraph 11(a) of the *Canadian Environmental Protection Act*, due to lack of exposure and effects data for the selected scenarios of concern (i.e., dust suppressant, land disposal, burning as fuel, and re-refining).

On June 21, 2003, Environment Canada published the summary of the *Draft Follow-up Report on a PSL1 Substance for Which There was Insufficient Information to Conclude Whether the Substance Constitutes a Danger to the Environment, Waste/Used Crankcase Oils* in the *Canada Gazette*, Part I. The report concluded that UCOs 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. During the public comment period, Environment Canada received a number of written comments. The majority of these addressed risk management and did not change the conclusion of the report which was that UCOs are toxic to the environment. A notice was published in the *Canada Gazette*, Part I on August 4, 2007 which summarized the final assessment report and informed Environment Canada's decision to take no further action in respect to UCOs since adequate risk management measures were already in place. In addition, Environment Canada committed to work with Canadian governments and industry to monitor publicly available information on used oil management programs in Canadian provinces and territories and if results indicated that existing preventive and control actions were not effective, the Ministers of the Environment and Health may consider taking further action under the *Canadian Environmental Protection Act, 1999* (CEPA 1999).

Hence, as a follow up to the decision to take no further action, the following report re-evaluates provincial and territorial preventative and control actions against several criteria and concludes whether these actions constitute effective risk management measures for UCOs.

1.2 Substance information

UCOs are defined as used lubricating oil removed from the crankcase of internal combustion engines. Before they are used, crankcase oils consist of a base lubricating oil (a complex mixture of hydrocarbons, 80 to 90% by volume) and performance-enhancing additives (10 to 20% by volume). Crankcase oils are altered during use because of the breakdown of the additives, contamination with the products of combustion, and the addition of metals from the wear and tear of the engine.

Generally, UCOs are a complex mixture of substances, many of which are already declared toxic and on Schedule 1 of CEPA 1999. These substances include:

- arsenic and its compounds;
- benzene;
- cadmium;
- chromium and its compounds;
- acidic, sulfidic and soluble inorganic nickel;
- polycyclic aromatic hydrocarbons (PAHs);

- Trichloroethylene;
- tetrachloroethylene;
- 1,1,1-trichloroethane;
- lead;
- and polychlorinated biphenyls (PCBs).

2 Criteria

The following sources of exposure to UCOs were identified as concerns in the assessment report[1] prepared by Environment Canada:

1 Disposal to land, landfill and sewers
2 Use as a dust suppressant
3 Burning as fuel
4 Re-refining

Based on these sources of exposure and the risk management objective, which is to focus on the collection of used oil and specifically ensure that programs are in place to recover and properly mange used oils, the following five criteria will be used to asses the effectiveness of Canadian risk management measures for UCOs:

- Controls prohibiting the disposal of used oils to land, landfill and sewers.
- Controls prohibiting the use of used oils as dust suppressant are in place.
- Controls prohibiting the open burning of used oils and restricting the use of used oils as a fuel are in place.
- Controls applicable to the re-refining and re-processing of used oils are in place.
- Programs to collect used oils are in place in all provinces and territories, and together they are able to recover at least a minimum proportion of the used lubricating oils generated in Canada.

3 Provincial and Territorial Risk Management Measures

This section will address regulations, legislation and guidelines in place regarding UCOs through a brief discussion based on the five criteria. In most cases, provinces and territories have measures in place to address the sources of exposure which gave rise to the criteria. A summary table of regulations and/or legislation is presented for each criterion in the Appendix.

3.1 Controls prohibiting disposal to land, landfill and sewers

All provinces and territories classify UCOs as hazardous waste under their respective legislation, which prohibits their disposal to land. Waste management regulations in most provinces and territories prohibit disposal to landfills. Since UCOs are classified as hazardous waste they are also banned from sewage disposal. Please refer to Table 1A in the Appendix.

3.2 Controls prohibiting the use of used oils as a dust suppressant

In the past, UCOs were applied to gravel and dirt roadways to minimize the amount of dust generated by vehicles. Typically, these oils were collected from service stations and fleet shops. This is no longer a common practice; used oil is not allowed as a dust suppressant on roadways

[1] Environment Canada, 2005, Follow-up Report on a PSL1 Substance For Which There Was Insufficient Information to Conclude Whether the Substance Constitutes a Danger to the Environment Waste/Used Crankcase Oils.

in 9 provinces and 3 territories. Please refer to Table 1B in the Appendix. Alberta is the only province which currently allows for the application of UCOs as a dust suppressant according to provincial guidelines.

3.3 Controls prohibiting the open burning and restricting use as a fuel

UCOs may be burned directly as a mixture with other fuel oils or by themselves in a variety of combustion units including boilers, engines, furnaces, incinerators, turbines, power plants, cement kilns, manufacturing facilities (asphalt, steel, etc.) and space heaters (i.e. residential, commercial, industrial).

All provinces and territories prohibit open burning of UCOs and regulate its use as a fuel. The regulations on using UCOs as a fuel vary slightly across the country. All provinces require permits for burning UCOs as a fuel. There are maximum contaminant levels that UCOs must meet to be burned, and requirements for the type of burners used. In some jurisdictions, small businesses that generate their own used oil are able to register to enable burning the UCOs as a fuel, exempting them from the permits required by larger sites. Please refer to Table 3A in the Appendix.

3.4 Controls applicable to the re-refining and re-processing of used oils are in place

Re-processing is a method whereby simple physical and/or chemical treatments are applied to remove the basic contaminants in used oil. Unlike re-refining, the objective of re-processing is to clean the oil so that it can be utilized for less demanding applications, not to produce a product comparable to virgin oil. The performance of re-refined crankcase oils is considered equivalent to virgin crankcase oils. Re-refining typically involves the physical and/or chemical treatments used for re-processing followed by other more complex processing such as acid/clay treatment, vacuum distillation/clay polishing, vacuum distillation/hydrotreating and chemical demetallization/distillation/hydrotreating.

The capacity for re-refining and re-processing of UCOs varies widely across the country, mainly attributed to the availability of facilities and feasibility based on volume. Of the 10 provinces, all legislation allows for re-refining of UCOs. Permits are required for handling UCOs in this manner, under Activities designations in many provinces. There are re-refining facilities in all the provinces except Québec, Prince Edward Island and Newfoundland and Labrador.

The territories have geographical and volume challenges to overcome with respect to re-refining of UCOs. All three territories allow for re-refining, and facilities would require authorization to operate. There are no re-refining facilities located in the territories. Please refer to Table 4A in the Appendix.

3.5 Used Oil Collection Programs

There are programs in place for collecting used oil in all of the provinces and territories, with some programs mandatory and others voluntary. Please refer to Table 5A in the Appendix.

3.5.1 British Columbia, Alberta, Saskatchewan, Manitoba, and Québec

British Columbia, Alberta, Saskatchewan, Manitoba, and Québec have used oil associations, mandated by provincial legislation, that are members of the Used Oil Management Association.

These associations are responsible for facilitating and increasing the collection, management and recycling of used oil material which includes used oil, used filters, and used oil containers. Membership in these associations encompasses representatives of wholesalers and first-sellers of lubricating oil products. There are government approved collectors and processors of the UCOs.

Québec is the only province or territory with recovery and reclamation targets set out in their regulations. Sections 5 through 7 of the *Regulation respecting the recovery and reclamation of used oils, oil or fluid containers and used filters* establish rates of recovery for 2005 and 2008. Products are delivered to processors by collectors, who are required to submit detailed reports on the origin and quantity of products collected.

Each of the provincial associations produces an annual report quantifying the amount of oil, filters and oil containers recycled. Table 3.5.1 shows the reported recovery rates from 2009 for the five associations. The target rates for 2009 set by Québec for the three categories of material were:

- Used Oil – 75%
- Used Oil Filters – 75%
- Used Oil Containers – 75%

Table 1: Reported recovery percentages from 2009 for the Used Oil Management Associations from British Columbia, Alberta, Saskatchewan, Manitoba and Québec.

2009 Reported Recovery Rate	Used Oil	Used Oil Filters	Used Oil Containers
British Columbia Used Oil Management Association	76.9%	90.4%	80.8%
Alberta Used Oil Management Association	83%	91%	85%
Saskatchewan Association for Resource Recovery Corporation	77%	78%	65%
Manitoba Association for Resource Recover Corporation	70%	77%	49%
Société de gestion des huiles usagées	98.9%	88.1%	87.6%

3.5.2 Ontario

Used oil material, including used oil filters and containers, was designated in 2003 under *The Waste Diversion Act (2002)*. A diversion plan for used oil material was developed by Waste Diversion Ontario.

Ontario has several mechanisms for collecting UCOs and related materials. A collection program has been in place for UCOs from commercial generators, with a collection rate estimated at 78%, according to a study done for the Ontario Waste Management Association and the Ontario Used Oil Management Association in 2004[2]. UCOs generated by consumers are collected

[2] Klaassen & Associates Inc., OWMA/OUOMA – Used Oil Study (Ontario), March 14 2004

through the municipal household hazardous waste program. Used oil filters and containers are part of the consolidated Municipal Hazardous or Special Waste (MHSW) program.
The MHSW delivered an annual report on the first year of collection of oil filters and containers for July 1, 2008 to December 31, 2009. The target for oil filters was 65%, collection rate was 39.6%; the target for oil containers was 30%, collection rate was 19.1%. The low rate of collection for oil filters has been attributed to an overstatement of the weight of oil filters available for collection, and processing incentives for containers have been adjusted to try to improve the under-achieving rate of collection for oil containers.

3.5.3 Nova Scotia, New Brunswick, Prince Edward Island and Newfoundland and Labrador

New Brunswick, Nova Scotia, Prince Edward Island, and Newfoundland and Labrador all have used oil regulations in place for UCO collection. The four provinces have very similar regulations with respect to collection facilities. Vendors of lubricating oil are required to collect UCOs at their facility or contract with another facility within a specific radius to collect UCOs. In addition, retailers must post information about the nearest collection facility. All collection facilities must keep a record of oil received. There are no programs legislated for the recovery of oil filters or containers.

New Brunswick reviewed its current regulations and determined that significant changes were required. These changes relate to the reporting of quantities sold versus quantities recovered, the effectiveness of the program and overall reporting. It is the intention of the new regulations to model a system based on the regulations in British Columbia, Alberta, Saskatchewan, Manitoba, and Québec, with an industry managed collection system that includes filters and containers. These changes are anticipated in 2011.

3.5.4 Yukon, Nunavut and the Northwest Territories

Yukon, Nunavut, and the Northwest Territories face geographical and logistical challenges when implementing a UCO collection system. The sparse population and large land area pose difficulties unique to the region. A pilot program was completed in the Yukon but a permanent program has not been implemented. Used oil is collected as part of their special waste collection for Yukon businesses. Some Nunavut communities have programs for collection and storage. Used oil recovery in the Northwest Territories is encouraged but not mandated.

4 Summary and Conclusions

Based on evaluation against the five criteria that represent the sources of exposure of concern for UCOs, results indicate that the provinces and territories have adequate risk management measures in place.

All provinces and territories have designated UCOs as a hazardous waste and disposal is prohibited to land, landfill and sewers under that designation. The accessibility of recovery programs across the country reduces the likelihood of illegal disposal to land, landfills and sewers. All provinces and territories ban the use of used oil as a dust suppressant, with the exception of Alberta. Permission must be granted for use in Alberta by the provincial government. Open burning of UCOs is prohibited across the country, with burning as a fuel restricted in each jurisdiction under air quality regulations. Provinces with re-refineries and re-

processing facilities have regulations in place requiring operating permits which control air quality issues. Used oil collection programs exist in all the provinces, and in some communities in the territories.

The five provinces (British Columbia, Alberta, Saskatchewan, Manitoba, Québec, and Ontario), who have reported on recovery rates, represented 94% of domestic sales of lubricating oils and greases in 2009[3] while the territories and the Atlantic Provinces represented 6%. A minimal national recovery rate for UCOs of 77% was achieved in 2009 (assuming the Ontario recovery rate for 2009 is the same as in 2004) even without taking into account the quantities of UCOs recovered in Atlantic provinces and the territories. The national recovery rate exceeds the only legislated recovery target in Canada: Québec's target of 75% for 2009.

Therefore, in light of the fact that the provinces and territories continue to have in place risk management measures for UCOs, which include prohibitions for land, landfill and sewer disposal of used oils; permits or approval systems to control burning of used oils; prohibitions or guidelines for use of used oils in dust suppression; controls for used oil re-processing and re-refinery operations; and programs to collect and manage used oil, Environment Canada maintains the position that no further action is needed on the management of UCOs.

[3] Statistics Canada, 2010, The Supply and Disposition of Refined Petroleum Products in Canada, Catalogue no. 45-004-X, vol. 65, no. 9, Tables 1-1 through 1-14.

Appendix A

Table A1 – Controls prohibiting disposal to land, landfill and sewers

Province/Territory	**Disposal to land, landfill and sewer**	**Regulation (if applicable)**
Newfoundland and Labrador	Prohibited	Used Oil Control Regulation 2002
Nova Scotia	Prohibited	Used Oil Regulation,
New Brunswick	Prohibited	Used Oil Regulation
Prince Edward Island	Prohibited	Used Oil Handling Regulation
Québec	Prohibited	Regulation respecting hazardous materials; Regulation respecting the landfill and incineration of residual materials
Ontario	Prohibited	Regulation 347 (General – Waste Management)
Manitoba	Prohibited	Waste Disposal Grounds Regulation
Saskatchewan	Prohibited	Used Oil Collection Regulation, Municipal Refuse Management Regulation
Alberta	Prohibited	Waste Control Regulation
British Columbia	Prohibited	Hazardous Waste Regulation
Yukon	Prohibited	Special Waste Regulation
Northwest Territories	Prohibited	Used Oil and Waste Fuel Regulation
Nunavut	Prohibited	Environmental Protection Act

Table A2 – Controls prohibiting the use of used oils as a dust suppressant

Province/Territory	**Use as a dust suppressant**	**Regulation (if applicable)**
Newfoundland and Labrador	Prohibited	Used Oil Control Regulation 2002
Nova Scotia	Prohibited	Used Oil Regulation
New Brunswick	Prohibited	Used Oil Regulation
Prince Edward Island	Prohibited	Used Oil Handling Regulation
Québec	Prohibited	Regulation respecting hazardous materials
Ontario	Prohibited	Regulation 347 (General – Waste Management)
Manitoba	Prohibited	Dangerous Goods Handling and Transportation Act
Saskatchewan	Prohibited	Hazardous Substances and Waste Dangerous Goods Regulation, Used Oil Collection Regulation
Alberta	Allowed	Interim Guidelines for the Application of Used Oil or Waste Refined Oil to Road Surfaces for Dust Control
British Columbia	Prohibited	Hazardous Waste Regulation
Yukon	Prohibited	Special Waste Regulation
Northwest Territories	Prohibited	Used Oil and Waste Fuel Regulation
Nunavut	Prohibited	Environmental Protection Act

Table A3 – Controls prohibiting open burning and restricting use as a fuel

Province/Territory	**Open Burning**	**Burning as a fuel with restrictions**	**Regulation (if applicable)**
Newfoundland and Labrador	Prohibited	Allowed	Used Oil Control Regulation 2002, Air Pollution Control Regulation 2004
Nova Scotia	Prohibited	Allowed	Used Oil Regulation, Air Quality Regulation
New Brunswick	Prohibited	Allowed	Used Oil Regulation, Air Quality Regulation
Prince Edward Island	Prohibited	Allowed	Air Quality Regulation
Québec	Prohibited	Allowed	Regulation respecting hazardous materials
Ontario	Prohibited	Allowed	Regulation 347 (General – Waste Management)
Manitoba	Prohibited	Allowed	Gas and Oil Burner Act
Saskatchewan	Prohibited	Allowed	Clean Air Regulation
Alberta	Prohibited	Allowed	Draft Code of Practice for Energy Recovery
British Columbia	Prohibited	Allowed	Hazardous Waste Regulation
Yukon	Prohibited	Allowed	Special Waste Regulation
Northwest Territories	Prohibited	Allowed	Used Oil and Waste Fuel Regulation
Nunavut	Prohibited	Allowed	Environmental Protection Act

Table A4 – Controls applicable to the re-refining and re-processing of used oils

Province/Territory	**Re-refining & re-processing**	**Regulation (if applicable)**
Newfoundland and Labrador	Controlled	Used Oil Control Regulation 2002
Nova Scotia	Controlled	Activities Designation Regulation
New Brunswick	Controlled	Used Oil Regulation, Air Quality Regulation
Prince Edward Island	Controlled	Used Oil Handling Regulation
Québec	No controls	Article 70.9 paragraphe 2 de la *Loi sur la qualité de l'environnement*
Ontario	Controlled	Regulation 347 (General – Waste Management)
Manitoba	Controlled	Waste Reduction and Prevention Act
Saskatchewan	Controlled	Environmental Management and Protection Act, Clean Air Act
Alberta	Controlled	Activities Designation Regulation
British Columbia	Controlled	Local Air Regulations
Yukon	Controlled	Special Waste Regulations
Northwest Territories	Controlled	Used Oil and Waste Fuel Regulations
Nunavut		

Table A5 – Used oil collection programs

Province/Territory	Used Oil Recovery	Legislation/Regulation	Details
Newfoundland and Labrador	Mandatory	Used Oil Control Regulation 2002	Sellers are required to accept used oil or provide alternative
Nova Scotia	Mandatory	Used Oil Regulations	Sellers are required to accept used oil or provide alternative
New Brunswick	Mandatory	Used Oil Regulation	Sellers are required to accept used oil or provide alternative
Prince Edward Island	Mandatory	Used Oil Handling Regulations	Sellers are required to accept used oil or provide alternative
Québec	Mandatory	Regulation respecting the recovery and reclamation of used oils, oil or fluid containers and used filters	Managed by the Société de gestion des huiles usagées
Ontario	Encouraged		
Manitoba	Mandatory	Used Oil, Oil Filters and Containers Stewardship Regulation	Managed by Manitoba Association for Resource Recovery Corporation
Saskatchewan	Mandatory	Used Oil Collection Regulations	Managed by Saskatchewan Association for Resource Recovery Corporation
Alberta	Mandatory	Lubricating Oil Material Recycling and Management Regulation	Managed by the Alberta Used Oil Management Association
British Columbia	Mandatory	Recycling Regulation	Managed by the British Columbia Used Oil Management Association
Yukon	Allowed	Yukon Environment Act	Pilot program completed
Northwest Territories	Encouraged		No program in place
Nunavut	Allowed		Community programs for collection and storage