

A critical review of the Used Oil Management Association (UOMA) Program Review

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A critical review of the Used Oil Management Association (UOMA) Program Review

Introduction

In June 2005 the National Used Oil Management Advisory Council (NUOMAC) published the results of a Program Review¹ of UOMA style used-oil material programs² operating in British Columbia, Alberta, Saskatchewan and Manitoba.

The media release that accompanies the report touts the UOMA as a, “...leader in program design, collection and compensation scheme compared to 14 other global used oil management programs. As well, the made-in-western Canada model is a world leader in maximizing used oil collection rates (over 75%) and re-refining rates (30%)³. “

The basis for this claim is a methodology that consists of 24 survey questions that were posed to 400 potential “stakeholder” respondents. Of the 119 respondents 30 were interviewed in depth. A general public opinion poll was also conducted. Finally, the Program Review undertook a benchmarking exercise of the western UOMA programs against other used oil management programs in other jurisdictions.

Purpose of this critique

This critique is not meant to be an exhaustive economic and environmental evaluation of UOMA programs themselves but an objective inquiry and comment regarding the methodology and supporting data used by the study consultants to reach three key conclusions:

1. The UOMA model is a, “...leader in program design, collection and compensation scheme compared to 14 other global used oil management programs; and further to this, “...the made-in-western Canada model is a world leader in maximizing used oil collection rates (over 75%);
2. “...the made-in-western Canada model is a world leader in maximizing...re-refining rates (30%)”; and
3. Re-refining of used oil and burning of used oil as a waste derive fuel are environmentally equivalent and that, “...there is no “right answer” for the appropriate end use for used oil.”

¹ Bearing Point Inc., 2005. *UOMA Program Review Final Report*. Edmonton, Alberta, Canada. Prepared for the Used Oil Management Association.

² UOMA programs were originally conceptualized and continue to be promoted by the Canadian Petroleum Products Institute (CPPI) as well as other non-affiliated virgin lubricating oil manufacturers.

³ http://www.usedoilrecycling.com/html/new_pr.htm



In addition to addressing these three contentions we also discuss the Program Review's use of a survey as a means to evaluate UOMA programs. An alternative approach to public policy review is Regulatory Impact Analysis (RIA)⁴ which for the most part is a functional approach to the economic analysis of law. We contrast the two approaches in the next section.

The UOMA Program Review survey

We begin our discussion of the UOMA Program Review survey by first describing its alternative - the economic analysis of law.

The economic analysis of law as a tool for evaluating public policy

Economics is the study of rationally directed behavior. By extension the economic analysis of law is the study of how laws (i.e. a law approving the operation of a used oil management program) affects the behavior of various elements of "the market" in meeting a given societal objective (say, reducing dumping of used oil).

The economic analysis of law⁵ essentially has two components:

1. A *descriptive*, empiric and quantitative component which answers questions about the effects of legal rules. That is, how do the rules change the behavior of market players? More specifically, how do the rules change behaviors that affect how much used oil material is recovered, reused, recycled and burned, the amount of toxic emissions to air and water, greenhouse gas emissions, the economic impacts on various economic players that are impinged by the program, changes in design of products and services, impacts on commercial competitiveness, etc.; and
2. A *normative* component which answers questions about the "social welfare" or "well-being" effects of the observed descriptive components. That is whether the observed effects are beneficial or desirable (and whether a different set of legal rules might result in an outcome better or worse than that observed under the legal rules in question). Social welfare extends beyond the narrow consideration of the production and consumption of goods and services and includes broader objectives (i.e. environmental impact, health, economic development etc.) that are deemed by society

⁴ RIA is becoming the standard evaluation tool for the development of public policy. Treasury Board of Canada Secretariat's Regulatory Impact Analysis (RIA) program offers a working approach for evaluating stewardship policies. See: http://www.tbs-sct.gc.ca/pubs_pol/dcgpubs/manbetseries/VOL14-1_e.asp#3e. Environmental assessment (EA) in its federal and various provincial forms also offers a framework for undertaking environmental and socio-economic impact analysis of proposed undertakings with potentially significant environmental implications. However neither federal nor provincial environmental laws are typically the subject of "policy EAs".

⁵ For a more scholarly treatment of this subject see Shavell S., 2004. *Foundations of Economic Analysis of Law*. The Belknap Press of Harvard University Press. Cambridge, Massachusetts, U.S.A. ISBN 0-674-01155-4



to be desirable. Normative factors are based on and vary by a given society's values and thus a weighing of costs against benefits will differ on what society values as beneficial.

We as Canadians value environmental protection. However, we often take for granted that programs established in the name of protecting the environment must by their very nature be “good” or “beneficial”.

It is difficult to find many instances of governments undertaking systematic empiric assessments or inventories of the environmental and economic outcomes of their environmental laws whether existing or proposed. This is not surprising given the few political benefits of undertaking detailed economic and environmental introspection and the many political benefits of expedient solutions that “look good” and “poll well”.

As a result, what often substitutes for the economic analysis of law are “stakeholder consultations” and more insidiously the survey or opinion poll. So then, what of the opinion poll as a tool for evaluating public policy?

The survey or opinion poll as a tool for evaluating public policy

Opinion polls are valued by politicians not because they give an accurate assessment of the economic and environmental outcomes of public policies but rather an accurate assessment of how the public *feels* about their *perceptions* of those outcomes⁶. In many cases even the participants and affected parties in a system of economic and environmental regulation have little or no idea of the overall economic and environmental outcomes of the regulations in question. They only know, and typically only care about, how they are affected by those regulations within their narrow interests.

In UOMA programs (and most other Canadian stewardship programs) producers are absolved of financial responsibility for their wastes which are borne directly by consumers through a system of visible “eco-fees”. Relieved of financial cost and for the most part legal liability (in the case of used oil it is transferred to the stewardship organization) producers and used oil generators remain generally content while consumers are typically happy to foot the bill and “do their part for the environment”. If the material collectors and end-users of recovered materials can be satisfied that some financial benefit can be derived from the program then for the most part there is overall contentment.

In such a system of “placated” participants and despite their ignorance of various broader economic and environmental aspects of the program, they can be expected to respond favorably to most any question posed to them about the program in question.

⁶ Opinion polling is not only useful for assessing public perceptions but also for determining *why* the public feels as it does and thus aids in the development of communications and public relations strategies targeted at “shaping public opinion”.



In this regard the use of an opinion poll is analogous to assessing the aerodynamic design and structural integrity of an airplane by querying the passengers on it – as long as it didn't shake much in flight and landed safely, the responses will generally be positive though wholly meaningless from an engineering perspective.

This is the very approach taken by the study consultants in “reviewing” key components of the UOMA programs. We address one key survey question employed by the Program Review consultants as an example below.

“Overall, have UOMA’s programs improved the collection of used oil materials in Western Canada?”

To answer the question factually a respondent would need to know current recovery rates in the context of the pre-program baseline recovery rates for used oil, used-oil filters and used-oil containers.

Since the British Columbia Used Oil Management Association (BCUOMA) is newly established and supplants an existing used oil return-to-retail program it provides a laboratory-like control to explore the general nature and outcomes of UOMA programs and an opportunity to evaluate the merit of an opinion poll or survey as a legitimate program review methodology.

Used oil material recovery pre and post BCUOMA

In 2000 Ronald J. Driedger⁷ then of the Pollution Prevention & Remediation Branch, British Columbia Ministry of Environment, Lands & Parks reported that the BC *Return of Used Lubricating Oil Programme*⁸ achieved the following,

“Each year, more than 40 million liters of used oil is collected in the province and prevented from entering the receiving environment.”⁹

⁷ Ronald J. Driedger is currently the Executive Director of BCUOMA.

⁸ “The *Return of Used Lubricating Oil Regulation* requires that all sellers of lubricating oil, with the exception of industry, provide the facilities needed to return used lubricating oil (up to the prescribed quantities). Source: <http://www.ec.gc.ca/epr/inventory/en/DetailView.cfm?intInitiative=88>

⁹ Driedger, Ronald J., 2000. *The British Columbia Experience in Monitoring and Reporting on EPR Programs*. In, OECD Joint Workshop on Extended Producer Responsibility And Waste Minimisation Policy In Support Of Environmental Sustainability. 4-7 May 1999. PART 1: Extended Producer Responsibility. Paris. ENV/EPOC/PPC(99)11/FINAL/PART1.



Again in 2002 Mr. Driedger reported that,

*“BC’s efforts began in 1992 with adoption of a regulation on used lubricating oil (lube oil). More than 40 million liters (L) of used lube oil have been collected annually through the EPR system established under this regulation.”*¹⁰

Also in 2002, the BC Ministry of Environment reported to Environment Canada that,

*“About 80% of the available used oil, is recovered in British Columbia.”*¹¹

In contradiction to the 3 references above, BCUOMA’s 2004 annual report¹² states that the previous BC *Return of Used Lubricating Oil Programme* regulation realized a 60% used oil recovery rate. BCUOMA states its expectations for the first year of operation as, “We initially estimated that 39.9 million litres of used oil would be collected for the year.” BCUOMA then reports that it was responsible for a 12 per cent increase in used-oil recovery in its first calendar year of operation - from a 60 per cent (an imputed 36.8 million liters) to 72 per cent (or 44.1 million liters in 2003).

BCUOMA asserts that, “Numbers don’t lie – BCUOMA is a resounding success.” However, the discrepancy between official reports of pre-BCUOMA used oil recovery rates and BCUOMA’s claim regarding those rates is irreconcilable and raises the question of whether BCUOMA has had any effect^{13,14} on used oil recovery (or used oil filter¹⁵ and used oil container recovery) in British Columbia.

¹⁰ Dreidger, Ronald J., 2002. *From Cradle to Grave Extended Producer Responsibility for Household Hazardous Wastes in British Columbia*. Journal of Industrial Ecology. MIT Press. Massachusetts Institute of Technology and Yale University. Cambridge, MA, U.S.A.

¹¹ See: <http://www.ec.gc.ca/epr/inventory/en/DetailView.cfm?intInitiative=88>

¹² British Columbia Used Oil Management Association. 2004. *Annual Report*. Chilliwack, British Columbia, Canada.

¹³ One effect that has been reported is an increase in the blending of hazardous waste into used oil. Under the BCUOMA program the practice of blending solvents and glycol (anti-freeze) into used oil in order to avoid recycling costs for those materials and to increase return incentive revenues has become endemic. This practice would have the effect of increasing reported used oil volumes.

“The Western Canadian EPR programs fund collection of used lube oil, not parts washer solvents, glycol or unburned fuels. At present the UOMA’s do not have any analytical protocols or contamination specifications (other than water content). Generators have the “opportunity” of blending their “no value” hazardous recyclables with used lube oil that has subsidized collection. Contamination is primarily an issue for rerefiners, not collectors, so Newalta conducts analytical testing on its feed stocks and works with its customers to encourage them not to dilute the used lube oil with other hydrocarbons.”

June 2, 2004 correspondence from Mr. Gary A. Webster, P. Eng., Director, Environment and Technology, Newalta to Mr. Leonard Surges, Director, Sustainable Development and Product Policy, Noranda/Falconbridge.

¹⁴ A similar situation regarding the measurement of used oil collection performance pre and post the implementation of a UOMA type program has arisen in Quebec with the January 1st 2005 launch of the Société de gestion des huiles usagées (SOGHU) program. The SOGHU program is identical in design, governance structure and function to the UOMA programs



But the point is not about BCUOMA's conflicting reports of used oil recovery rates. More significantly, the key point is that a typical survey respondent – even a UOMA Board member – would not have had ready access to the necessary information to provide a meaningful answer to the question of whether UOMA programs increase the recovery of used oil (or used oil filters and containers for that matter).

The Program Review goes on to ask a number of similarly empiric questions that are equally as difficult to provide meaningful answers to without a complete understanding of both the interaction of various program elements within the economic system in which the program operates and the environmental implications of those interactions. Each item below was posed as a question requiring the respondent to rank their level of agreement:

1. *Return incentive rates paid to re-processors and recyclers should be the same and should not favour different technologies.* This is a public policy question regarding the environmental hierarchy of reduce, reuse (re-refining), recycle and burning as it applies to recovered used oil materials – an issue of scientific inquiry. The UOMA Program Review consultants go on to address this issue in Section 3.3 “Used oil end uses” of the Program Review and we review their discussion in this critique further on;
2. *A high percentage of the Environmental Handling Charges (EHC) should flow through to Collectors as Return Incentives (RI);*
3. *UOMA's Environmental Handling Charges (EHC) and Return Incentive (RI) rates for used oil are reasonable.* Of course the question of whether the EHC and RI scheme for used oil is even necessary with regard to used is never asked. In either case a typical respondent would not have the information to answer either question meaningfully. The effects and need for the EHC/RI scheme on the used oil market is discussed in the following sections in context of the Program Review's assertions regarding collection performance and its claim of UOMA type programs promoting re-refining;

in Western Canada. In an affidavit sworn on December 9th 2004, by M. Carol Montreuil, Chairman of SOGHU and Vice-president of the Eastern Canada Division of the Canadian Petroleum Products Institute (CPPI), M. Montreuil states that the combined annual collection volume of Quebec's three largest used oil collectors was 67 million liters. In an information document circulated by SOGHU to program participants in October 2004 SOGHU claims that 92 million liters of used oil were available for collection at the time. Considered together, Quebec's pre-SOGHU used oil recovery rate was *at least* 72.8% - we say *at least* because this calculation only considers the collection volumes of the three largest collectors in jurisdiction where many other collectors are operating. Of note, the provincial regulation, *Regulation respecting the recovery and reclamation of used oils, oil or fluid containers and used filters* has a 2005 used oil collection target of 70%.

¹⁵ Insofar as used oil filters are concerned, Safety-Kleen Canada Inc. alone recovered 10% of the used oil filters sold in British Columbia in 2002 and 2003 (pre-BCUOMA). Given that Newalta (once it had purchased the Mohawk re-refinery and its used oil collection business in 2002) had well over 80% of the pre-BCUOMA used oil collection market and that it collected used oil filters as part of its used oil collection services, the 18% used oil filter recovery rate claimed by BCUOMA is highly implausible.



4. *UOMA's Environmental Handling Charges (EHC) and Return Incentive (RI) rates for used oil filters are reasonable;*
5. *UOMA's Environmental Handling Charges (EHC) and Return Incentive (RI) rates for used oil containers are reasonable;*
6. *UOMA has been effective in facilitating private industry's collection and reprocessing and recycling of used oil materials in Western Canada; and*
7. *Overall, UOMA's programs have improved the collection of used oil materials in Western Canada.*

Now that we have completed our discussion of alternate approaches to public policy evaluation let us turn our attention to the key contentions of the UOMA Program Review.

UOMA Program Review key contention 1: “UOMA as a world leader in used oil recovery rates”

The Program Review contends that:

“The UOMA model is a, “...leader in program design, collection and compensation scheme compared to 14 other global used oil management programs; and further to this, “...the made-in-western Canada model is a world leader in maximizing used oil collection rates (over 75%) and re-refining rates (30%).”

The Program Review uses un-sourced used oil recovery and re-refining rate data for a number of jurisdictions in order to make comparisons to UOMA jurisdictions. Based on the jurisdictions selected the comparisons are favorable to UOMA.

The Program Review does not identify jurisdictions in which used oil recovery and re-refining rates match or greatly exceed those of UOMA jurisdictions. These jurisdictions include¹⁶:

- Austria: 77% used oil collection rate in 2000
- France: 81% used oil collection rate and 31% re-refining rate in 2000
- Finland: 93% used oil collection rate and 7% re-refining rate in 2000
- Netherlands: 92% used oil collection rate and 30% re-refining rate in 2000
- Sweden: 89% used oil collection rate in 2000

¹⁶ European Topic Centre on Resource and Waste Management: Topic Centre of European Environment Agency. See: <http://waste.eionet.eu.int/wastebase/quantities/index.html>



- Germany: 68% used oil collection rate and a 59%¹⁷ re-refining rate in 2000 (not 18% re-refining as reported in the Program Review); and
- Greece: 91% used oil collection rate and 58% re-refining rate in 2000

One jurisdiction discussed in the Program Review that is worthy of separate mention here is the United Kingdom. The Program Review states that the UK recovers 76% of available used oil (A study prepared for the DETR concluded that the actual recovery rate is over 80%¹⁸) and attributes this performance to a “program” whose purported focus is, “... to maximize collection rates.” In fact, the UK does not have a formal, incentive-based, government approved used oil collection program at all. Used oil collection and final disposition¹⁹ is strictly the subject of free market activity with the only stipulations being that used oil generators contract with licensed waste carriers and the requirement for record keeping regarding used oil transactions undertaken under those contracts.²⁰

Also not considered are the non-UOMA used oil programs in other Canadian jurisdictions. Two immediate instances of which include British Columbia pre-BCUOMA (a jurisdiction with a pre-existing return-to-retail used oil program) and Ontario, home to Canada’s largest re-refiner and the progenitor jurisdiction of the largest used oil re-refining operation in the world. Now let us consider these jurisdictions.

Used oil recovery in Pre-BCUOMA B.C. and Ontario

Newalta – the sole re-refiner in Western Canada collected 27.4M liters²¹ in Alberta and just less than 35M liters²² in British Columbia in 2003. Given that over 40 million liters of used oil was recovered annually under the *Return of Used Lubricating Oil Programme*, British Columbia’s re-refining rate under that program was over 80% in 2003.

¹⁷ There are 6 re-refining operations in Germany with an approximate capacity of 565,000 tonnes or about 665 million liters of used oil. Source: (GEIR) Groupement Européen de l'Industrie de la Régération (European Re-refining Industry): a section of the Independent Union of the European Lubricant Industry (UEIL).

¹⁸ “790,000 tonnes of lubricants with a value of £1.8 billion were sold in the UK during 1999. Within a few months of purchase approximately 50% had been used in a variety of products or otherwise lost in use. Of the remaining 395,000 tonnes, more than 80% was collected, mostly free of charge, added to a mixture of other oily wastes and after rudimentary treatment used as a support fuel.” Oakdene Hollins Ltd. 2001. *UK Waste Oils Market 2001*. Prepared for the Department of Environment, Transport and the Regions. U.K.

¹⁹ Of note, the U.K. was convicted by the European Union Court on 15 July 2004: Case C-424/02: Commission of the European Communities v United Kingdom of Great Britain and Northern Ireland (Failure of a Member State to fulfill obligations — Directive 75/439/EEC — Disposal of waste oils — Priority to be given to the processing of waste oils by regeneration).

²⁰ See the reference in footnote 18.

²¹ June 2, 2004 correspondence from Mr. Gary A. Webster, P. Eng., Director, Environment and Technology, Newalta to Mr. Leonard Surges, Director, Sustainable Development and Product Policy, Noranda/Falconbridge.

²² Personal communication with Mr. Gary A. Webster, P.Eng, Director, Government Relations, Newalta on October 4th 2005.



In 2002 (the last year for which the calculation was undertaken) Ontario, Canada realized an annual used oil recovery rate of over 80%²³ and a re-refining rate of 45%²⁴. The used oil filter recovery rate in Ontario for 2002 was estimated to be at least 75%²⁵.

A question immediately arises – How is it that Pre-BCUOMA British Columbia and Ontario can exceed the recovery performance of UOMA jurisdictions without a “formal” broad-based used oil program?

Both Pre-BCUOMA B.C. and Ontario exceed UOMA jurisdictions in used oil recovery and re-refining rates. How can this be?

The British Columbia Ministry of Environment describes the pre-BCUOMA *Return of Used Lubricating Oil Regulation* program in the following way,

*“In 1992, the province of British Columbia enacted the Return of Used Lubricating Oil Regulation. It required that all sellers of oil take back used oil, at no charge to the consumer, either at point of sale or arrange for take-back with a third party that is in close proximity to the seller. The used lubricating oil program was implemented to provide “do-it-yourself” consumers with the opportunity to return used oil for recycling.”*²⁶

However this description of the program for collection of used oil from do-it-yourself oil generators only identifies the most superficial component of a greater regulatory system for managing hazardous waste in British Columbia.

The more critical components of the regulatory system for managing hazardous waste in British Columbia and Ontario are:

- Registration of both used oil generators, collectors and processors;
- Requirement for used oil generators to use registered collectors;

²³ Based on an assessment of manifest data and an assessment of quantities of used oil collected under manifest exemptions the Ontario Ministry of Environment calculated that 166M liters of used oil were recovered in Ontario in 2001. Lubricating oil sales in Ontario in 2002 were 332.3M liters (Source: Lubricant Profiles 2002) of which 61.4% or 203.9M liters was assessed by the WDO to be recoverable. This assessment was based on engineering and professional estimates of in-use consumption of various classes of lubricating oil. These data were summarized by the WDO for presentation to the WDO Board on April 27th 2004.

²⁴ Based on approximately 75M liters of direct and 3rd party used oil collections received by Safety-Kleen Canada Inc. from the Ontario market.

²⁵ In its June 15th 2004 final submission to Waste Diversion Ontario (WDO) the Ontario Used Oil Management Association (OUOMA) provided an estimate of 23,021,660 used oil filters available for collection in Ontario in 2004. In 2003 Safety-Kleen Canada Inc. alone collected 13 million filters (or 57% of that amount). There are dozens of other used oil material collectors operating in Ontario that also collect used oil filters.

²⁶ <http://wlapwww.gov.bc.ca/epd/epdpa/ips/progdev/history.html>



- Tracking of used oil from point of generation to final disposition via a manifest system; and
- Ongoing Ministry of Environment oversight and enforcement.

In effect these requirements result in the assignment of property-rights (and hence liability) for used oil to used oil generators and cause exchanges of used oil property-rights (and associated liabilities) to be tracked from the generator to final disposition of the used oil. Because of this tracking the generator is in effect ultimately held responsible for where the used oil ends up. Thus the generator has a very strong incentive to contract the management or stewardship of its liability with highly reputable operators that can verify the disposition of all the oil collected and processed.

This property-rights model for used oil is the quintessential description of a “polluter pays” program. Moreover since an overwhelming number of used oil generators are also lubricating oil brand-owners this is also an ideal example of Extended Producer Responsibility.^{27,28} With regard to large²⁹ generators of used oil (that comprise the bulk of the used generated) this regulatory scheme results in 2 key market dynamics:

²⁷ *“EPR extends the traditional environmental responsibilities that producers and distributors have previously been assigned (i.e. worker safety, prevention and treatment of environmental releases from production, financial and legal responsibility for the sound management of production wastes) to include management at the post-consumer stage.”*

Organization for Economic and Cooperative Development (OECD). October 2000. *Working Party on Pollution Prevention and Control. Extended Producer Responsibility: A Guidance Manual for Governments.*

²⁸ Excerpts from a commercial used oil collection and processing contract between Safety-Kleen Canada Inc. and Company X (a major petroleum products brand-owner) highlight the extent to which Company X is concerned about the transfer and management of its liabilities. The contract specifies conditions for recovering and processing used oil generated by both Company X’s own automotive service stations and those owned by 3rd party vendors of its lubricating oil:

“RISK and TITLE

Collector covenants and agrees that the risk and property interests in used oil will transfer from Company X or Company X’s customers to collector upon commencement of removal or preparation for transportation at Company X or Company X’s customers site, on the condition that the used oil is not later shown to deviate from the used oil requirements set out in the job specifications...”

And,

“Warranties

Customer represents and warranties that: (a) it has/will not mix any hazardous material, including without limitation materials containing polychlorinated biphenyls (PCBs) or any other material regulated as hazardous waste, with the used oil collected by Safety-Kleen hereunder; (b) it has/will not mix any material, including without limitation, oil, radiator flushings, PCBs or any other material regulated as hazardous waste, with the spent anti-freeze and other automotive waste materials to be collected by Safety-Kleen hereunder...”

²⁹ This regulatory régime is most effective with “large” generators of used oil (i.e. service station chains, government and private vehicle fleets etc.). Without diligent enforcement smaller generators often try to “cut corners” and lower their used oil disposal costs. Moreover smaller generators are often less subject to scrutiny and have “less to lose” with regard to regulatory infractions than larger generators of hazardous waste. In this regard a provincial manifest system has to be



- Competition between used oil collectors/processors is based on the ability to demonstrate diligence in managing the generators used oil and not simply on used oil commodity pricing. The liability management function of the collection and processing service has value to the generator over and above simply “getting rid” of used oil and used oil filters at least cost;
- Used oil generators are far less likely to engage collectors that ship used oil to 3rd parties that blend used oil for burning as a waste derived fuel since the final disposition of the oil cannot be verified (i.e. how and where it was burned);

It is this regulatory environment that set the stage for Newalta (which bought the Mohawk re-refinery in Vancouver in 2002) and Safety-Kleen to build businesses that integrate liability management service with re-refining – a used oil management option that recovers the most financial potential from used oil. From a generator liability perspective re-refining is considered the ultimate disposition for used oil since re-refineries themselves are highly regulated operations.

In that this “polluter pays” based regulatory system has been responsible for driving high collection rates for used oil and used oil filters as well as driving high rates of re-refining, both provinces have enjoyed very effective and efficient “used oil management programs”.

flexible and sensitive enough to track movements of smaller multiple shipments and inevitably requires constant scrutiny. This issue has been publicly identified by the BC MOE as a weakness of the manifest system in British Columbia:

“Eric Partridge, assistant deputy minister of the ministry’s environmental-protection division, said the manifest system maintained by the ministry can be a valuable investigative tool but it has its problems.

For example, companies are currently required to fill out paper manifest forms that are then sent to the government and entered into a computer database. Many of the forms received by the government are known as “multiple” manifests. These forms may detail how a company sent a truck out to pick up small amounts of, say, waste oil from a number of different garages. The mixed waste oil is then sent as one large shipment to a waste handler. Each separate waste pickup on a multiple pickup run is supposed to be recorded by the shipper. But in the provincial government’s electronic database, such mixed shipments are simply recorded as “multiple” pickups. There is no indication of who produced it in the first place...

...He also said the government is considering moving to a system where any company producing hazardous waste would be responsible for that waste right through to its final treatment and disposal, rather than the current system where waste is consigned to someone else for treatment and disposal—essentially a system in which the buck is passed from one party to the other.

The so-called cradle-to-grave approach ensures “greater responsibility”, Partridge said. The upside to such a move is it makes one party responsible for the waste. The downside is that it may involve a lot more paperwork, public oversight, and cost.”

“Deadly brew”, Vancouver Free Press, March 24th 2005
<http://www.straight.com/content.cfm?id=9061>



UOMA Program Review key contention 2: “The made-in-western Canada model maximizes re-refining”

In July 2003 the existing *Return of Used Lubricating Oil Regulation* was replaced by the establishment of a program administered by the BCUOMA (“the BCUOMA program”). This program is identical in premise and operation to the prototype program in Alberta (administered by the Alberta Used Oil Management Association).

In considering the effect of the impacts of the BCUOMA program on the used oil collection and processing market the key issue is how BCUOMA has altered the exchanges of used oil liability between generators, collectors and processors and the competitive effects of the return incentive scheme³⁰ in the context of those altered relationships.

Sanctioned by provincial governments under various provincial stewardship policy instruments the UOMA scheme creates a new “person” – in the case of British Columbia BCUOMA – an intermediary that acts on behalf of lubricating oil brand-owners ostensibly to facilitate the recovery of used oil, used oil filters and used oil containers.

The UOMA have a profound effect on the pre-existing relationships between market-players in that they break the liability chain between the used oil generator and the final disposition of the used oil collected. Consider that since used oil collectors are accredited by BCUOMA all collectors now have equal status as “BCUOMA approved” irrespective of where the oil they collect is delivered to or how it is used.³¹ Individual used oil generators are effectively absolved of any liability associated with used oil materials once collected by a BCUOMA “approved” collector. Hence collection of used oil and used oil filters has gone from a liability management business to a commodity business – a situation exacerbated by the concurrent application of return incentives (discussed further on).

³⁰ “Return incentives” paid by UOMAs to used oil collectors for collecting used oil, used oil filters and used oil containers are derived from monies pooled from consumer charges levied on sales of lubricating oil, oil filters and oil containers.

³¹ Canadian Petroleum Corporation was an approved BCUOMA used oil collector and “recycler”. In 2004 it was charged with 11 violations under the Waste Management Act. As reported in “Deadly Brew” in the Vancouver Free Press on March 24th 2005:

“As the company’s name suggests, CPC’s business was supposed to be all about dealing with petroleum, more specifically waste oil. Waste oil and petroleum can be contaminated with a host of nasty substances, including arsenic, chromium, lead, and mercury, which is why the B.C. government considers it “special” waste, a euphemism for hazardous or toxic.

As a company dealing with such material, CPC needed a waste permit from the province in order to operate its facility. Such permits require waste handlers to post bonds in the event there are problems. And there would be problems aplenty at CPC’s leased facility in an industrial park in Abbotsford, not the least being that it never held a permit to store or treat waste-oil products, let alone more troubling wastes such as the chromium-contaminated materials that entered its facility by the truckload.”



The changes in these relationships were immediately felt in the BC market long before program implementation in July 2003. For example, Newalta had a long-standing contractual arrangement with Chevron Canada to recover the used oil from its automotive facilities generated through oil changes and used oil dropped off by DIY customers. In anticipation of the BCUOMA program Chevron sold off its tank farm it used for bulking collected used oil and terminated its contract with Newalta for relief of those tanks and re-refining of the used oil recovered.

Quantitative impacts of the BCUOMA program on re-refining in British Columbia

As mentioned earlier the breaking of the liability management chain between used oil generator, collector and processor set the stage for dramatic changes in market dynamics. The prospect of return incentives – financial incentives paid to collectors for the recovery of used oil materials – in a market unfettered by stewardship agreements virtually upended the British Columbia used oil market. As early as May 2003 the advent of the BCUOMA program was upsetting the BC used oil material market resulting in the following:

1. Prior to BCUOMA Newalta was charging used oil generators between \$0.07 to \$0.09 per liter of used oil collected under its various stewardship agreements.³²
2. In May of 2003 (subsequent to the dissolution of many stewardship arrangements but just prior to BCUOMA) a new market entrant appeared (M&R Recycling). In anticipation of the return incentive scheme forthcoming under the BCUOMA and in order to grab up market share M&R began to pay generators \$0.05/ liter for their used oil. Subsequently M&R initiated a series of payment increases forcing Newalta to match their price in order to retain re-refining volumes.³³
3. At the end of 2004 the price of used oil had increased to \$0.14. On January 1st 2005 Newalta made a market “stand” and increased its price to \$0.24/liter.³⁴
4. Newalta continues to pay \$0.24 /liter. M&R typically pays generators \$0.18 to \$0.24/liter of oil collected. Currently it is estimated that M&R collects 10M liters of used oil in the British Columbia Lower Mainland much of it volume previously held by Newalta/Mohawk.³⁵

³² Personal communication with Ian Lewis, Western Market Manager, Safety-Kleen Canada Inc.

³³ Ibid.

³⁴ Ibid.

³⁵ Ibid.



5. Newalta's British Columbia collection volume is reported as 24.1M liters³⁶ for 2004 as compared to just less than 35M³⁷ liters per year pre-BCUOMA – a loss of at least 9 million liters of used oil volume.

Over and above the changes in market dynamics this raises the question of the need for return incentives in a market where collectors are buying used oil from generators at a cost that is 3 times the return incentives they receive from the UOMAs. This fact should provide cause to revisit and reflect on one of the survey questions, "UOMA's Environmental Handling Charges (EHC) and Return Incentive (RI) rates for used oil are reasonable."

Let us summarize the effects of BCUOMA on re-refining in British Columbia.

A summary of the effects of BCUOMA on re-refining in British Columbia

1. The BCUOMA program has had the effect of severing long-standing stewardship/liability management arrangements between used oil collectors/processors such as Newalta and used oil generators. In conjunction with the return incentive system this has had the effect of commoditizing used oil collection services; further to this;
2. The collection of used oil has been transformed from a fee-for-service liability management business commanding \$0.07-\$0.09 per liter to a commodity market whereby used oil collectors pay generators up to \$0.24 / liter;
3. The commoditization in conjunction with the return incentive scheme has created new market entrants that are highly competitive³⁸ in shipping used oil to fuel markets. These new entrants now comprise a significant portion of the market; and

³⁶ BCUOMA. June 27th 2005. *Report to Director of Waste Management. Ministry of Environment.* Chilliwack , B.C.

³⁷ See footnote 22

³⁸ At the June 2004 Recycling Council of British Columbia annual conference in Whistler, British Columbia, Ron Driedger, Executive Director of BCUOMA stated that the BCUOMA program had increased the number of collectors and had thus "increased competition" in the B.C. used oil collection market (personal observation). This comment was made in reference to Newalta's high market share of used oil collection pre-BCUOMA. Unfortunately this misrepresents the intent of competition policy which is not to maximize the number of firms in a market but rather ensure market competition in order to increase welfare (e.g. overall economic and environmental benefit). Given the following observations:

- Newalta had built its business on the provision of environmental liability management services with respect to used oil materials in apparent open and unfettered competition with other collectors and processors;
- The BCUOMA program has increased both costs to consumers and the costs of re-refining; and
- There has not been a demonstrable increase in used oil and used oil filter collection but a measurable reduction in re-refining,

it can be strongly argued that the BCUOMA program has reduced overall welfare. (*con't*)



4. Newalta a re-refiner and the largest collector of used oil in British Columbia has lost at least 9 million liters of used oil volume from the B.C. market and its costs to acquire used oil have increased by at least \$0.24/liter (net of return incentives paid by BCUOMA).

Now let us turn our attention to the final key contention of the UOMA Program Review: “Re-refining and burning used oil are environmentally equivalent”.

UOMA Program Review key contention 3: “Re-refining and burning used oil are environmentally equivalent”

The Program Review cites 2 references in support of the contention that, “...there is no “right answer” for the appropriate end use for used oil.”

- A draft OECD study entitled “Improving Markets for Secondary Materials: Case Study on Oils” ENV/EPOC/WPNEP (204)1. The OECD reports that this 2004 draft document is embargoed and not to be referenced³⁹. Respecting the OECD’s position regarding this draft report we give it no further consideration; and

Moreover, BCUOMA’s claim that its program had the effect of increasing the number of competitors in concert with the observation that it had an impact on used oil collection pricing and increased the costs of re-refining provides evidence that BCUOMA has market power – a competition law concern given that BCUOMA’s primary sponsors are crude oil refiners who compete directly with used oil re-refiners in the lubricating oil market.

An excellent treatment of competition policy is provided in, Motta, Massimo. 2004. *Competition Policy: Theory and Practice*. Cambridge University Press, Cambridge, UK. ISBN 0-521-01691-6

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Sent: Fri 7/29/2005 11:46 AM
Dear Mr. Valiente (sic),

Your correspondence about the OECD report “Improving Markets for Secondary Materials: Case Study on Oils” ENV/EPOC/WPNEP(204)1 has been forwarded to me, in the absence of Nick Johnstone, who is presently on annual leave. I wish to confirm that this report is presently classified, i.e. for official use only. Following this first draft, the report has been revised and is still under review by OECD Member-countries. A final version will be available and declassified this fall. Meanwhile, the present version should not be used nor quoted by unauthorized persons or institutions.

Yours sincerely,

Jean-Philippe Barde
Chef de la Division des politiques nationales
Head, National Policies Division
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<http://www.oecd.org/env/>



- EUROPIA’s⁴⁰ report *Recycle of Used Oils: Legal and Technical Considerations* prepared in support of “*EUROPIA Used Oil Position*” (2003) (The “EUROPIA study”)

A third study is also worth considering here as it is an oft cited review of a number of used oil life-cycle assessments (LCA) prior to 2001:

- Taylor Nelson Sofres Consulting. December 2001. *Critical Review of Existing Studies and Life Cycle Analysis on the Regeneration and Incineration Of Waste Oils*. Prepared for the European Commission, Director General Environment (The “TNS review”)

Finally, the Institute for Energy and Environmental Research (IFEU) in Heidelberg, Germany published an LCA⁴¹ in February 2005 which would have been readily available to the UOMA Program Review study team. This peer reviewed LCA has been undertaken in an approach consistent with ISO 14040.⁴² The IFEU LCA also considers North American re-refining practices.⁴³

Neither the TNS review nor the EUROPIA studies are LCA per se but reviews of previously conducted LCAs. The TNS review is based on four LCAs conducted between 1995 and 2000. Both the TNS review and the EUROPIA studies are of European re-refining practices dated by between 5 and 10 years.

While the EUROPIA study claims to have, “...reviewed the published information of Life Cycle Analysis (LCA) for the disposal of used oils.” it does not provide a bibliography or any references to the studies that were reviewed.

⁴⁰ EUROPIA is, “...the European government affairs organisation of the oil refining and marketing industry in the EU and EEA.” EUROPIA is analogous in general membership and purpose to the Canadian Petroleum Products Institute (CPPI). EUROPIA virgin lubricating oil producers are competitors to re-refiners.

⁴¹ Institute for Energy and Environmental Research (IFEU). February 2005. *Ecological and energetic assessment of re-refining used oils to base oils: Substitution of primarily produced base oils including semi-synthetic and synthetic compounds*. Heidelberg, Germany. Prepared for GEIR (Groupement Européen de l’Industrie de la Régénération GEIR – the European re-refining industry association)

⁴² International Standard ISO 14040 Environmental Management – Life Cycle Assessment. As identified by the critical review team the study has stated that, “...subject to small number of reservations, the LCA has been conducted in a way that is consistent with ISO 14040 series.”

Section 7.1 of ISO 14040 defines the objectives of the critical review as being to ensure that:

- The methods used to carry out the LCA are consistent with ISO 14040 series;
- The methods used to carry out the LCA are scientifically and technically valid;
- The data used are appropriate and reasonable in relation to the goal of the study;
- The interpretation reflects the limitations identified and the goal of the study;
- The study report is transparent and consistent.

⁴³ North American re-refineries exclusively employ thin film evaporation in concert with hydrotreating (also called hydrofinishing). The IFEU study incorporates life-cycle data from Evergreen Oil Inc.’s re-refinery in Irvine, California.



Before evaluating the EUROPIA and TNS studies we need to take a moment to address the European virgin lubricating oil industry's contentions regarding the quality and performance of re-refined lubricating oil.

The European oil industry's claims regarding the quality of re-refined lubricating oils

Of note the scope of both the EUROPIA study and TNS review extends beyond life-cycle environmental considerations to economic considerations regarding the quality, cost-effectiveness and marketability of re-refined oils in Europe.

EUROPIA opens its discussion of relative environmental performance of re-refining and incineration of used oil with a discussion regarding the environmental implications of "Product performance equivalency". EUROPIA contends that,

"...data on most commercial samples of re-refined base stocks collected and tested from around the world during the 1990s showed demonstrably lower oxidation stability than virgin base oils. This translates into shorter oil drain periods and hence increased quantities of lubricant needed plus, ironically, more used oil and used oil filters generated."

EUROPIA also claims that the increases in performance of modern lubricating oils during vehicle operation has improved fuel economy and power output and as such the introduction of,

"...lower quality re-refined base oils could jeopardize this on-going improvement."

Contrary to EUROPIA (Groupement Européen de l'Industrie de la Régénération GEIR – the European re-refining industry association) states that,

"...90% of waste oils re-refining in Europe is now taking place in technologically advanced plants, provided with high pressure hydrofinishing or with solvent extraction, able to reduce to zero the aromatics and, consequently, the PNAs⁴⁴ content. Almost all these plants in Italy, Greece, Poland, Germany, Denmark and Spain are already able to produce API⁴⁵ Group II lubricating bases, sulphur free, with high viscosity index and saturates."⁴⁶

⁴⁴ Poly-nuclear aromatic hydrocarbons.

⁴⁵ American Petroleum Institute. API does not distinguish oils on the basis of raw material feedstock (i.e. crude oil or used oil) but only on the performance characteristics of the base oils that are produced as a result.

⁴⁶ Renato Schieppati. Honorary President, GEIR. March 14th 2005. *False Accusations Against The Re-Refining Industry* Milan, Italy.



With regard to North American re-refining operations Evergreen Oil Inc. (Irvine, California), Safety-Kleen Systems, Inc. (with re-refineries in East Chicago, Indiana and Breslau, Ontario) and Newalta Corporation (Vancouver, British Columbia) are all hydrotreating operations that produce base oils that meet and exceed 2005 automotive lubricating oil standards (specifically, API SM / ILSAC GF-4 standards).

In light of its own undertakings the U.S. Department of Defense, Defense Supply Center Richmond (DSCR) states the following with regard to performance equivalency of re-refined oils with virgin base oils,

“Re-refined oil is subject to the same stringent refining, compounding, and performance standards as virgin oil. Extensive laboratory testing and field studies conducted by the National Bureau of Standards (now the National Institute of Standards and Technology), the U.S. Army, the U.S. Department of Energy, the U.S. Postal Service (USPS), and EPA concluded that re-refined oil is equivalent to virgin oil, passes all prescribed tests, and can even outperform virgin oil.”⁴⁷

Considering that API specifications apply equally to lubricating oils irrespective of the raw materials used to produce them and solely on the conformity of re-refined oil to those standards, EUROPIA’s assertions regarding the quality and of re-refined oils and hence its concerns regarding, “*increased quantities of lubricant needed*” and reductions in vehicle performance are not valid. Further to this the TNS review notes that with regard to re-refined base oils, “...the quality of base stocks produced is comparable to virgin base oils (Group I and even Group II when a severe hydro or solvent treatment is used for the finishing step).”

Now lets us turn to EUROPIA’s contentions regarding the relative environmental merits of re-refining and burning used oil.

The EUROPIA study: energy requirements to recycle used oils

The EUROPIA study contends that, “...recycle of used oils by burning in cement kilns gives slightly higher savings than other options.” The energy consumption and re-refining yield data presented in support of EUROPIA’s finding are un-sourced, therefore unverifiable and their applicability to the North American context un-assessable.

That said, GEIR provides the following observations regarding the sources of EUROPIA’s LCA information⁴⁸,

“...Europia’s recent studies make reference to LCA dating back to the nineties and made for specific local situations. Therefore these LCA don’t keep into account the

⁴⁷ U.S. Defense Supply Center Richmond (March 12, 2003). *DSCR’s Re-refined Motor Oil Programs* See: www.dscr.dla.mil/products/pol/refined.htm.

⁴⁸ See 46



technology and consumptions evolution and giving to these analyses a universal validity is wrong...”

The EUROPIA review limits itself to a discussion of relative energy profiles. Other relative environmental aspects (i.e. resource consumption, global warming potentials, acidification etc.) of re-refining and incineration are not considered by EUROPIA or offered for discussion.

Now let us turn our attention to the Taylor Nelson Sofres (TNS) study which is often cited as making the case for the equivalence of burning used oil to re-refining it.

The Taylor Nelson Sofres (TNS) study

The 2001 TNS study reviews four LCAs that are to this date between 5 and 10 years out of date. Two of the four studies are consistent with the requirements of ISO 14040 while the remaining two were undertaken prior to the ratification of ISO 14040.

Pertinent excerpts of the TNS review provide a summary of the general findings of the four reviewed LCAs,

- “From a local impacts perspective, when considering only the recovery treatments, the impacts generated by the regeneration (re-refining) plant are generally lower than those generated by the incineration plant.
- The environmental impacts due to collection and transport of WO (Waste Oil) and primary materials are not significant within a life cycle perspective compared to the impacts of the industrial processes (this is often the case in LCAs performed for waste management options, e.g. packaging waste).
- The environmental burden of the recovery treatment (regeneration or incineration) by itself is generally less important than the one of the avoided process (virgin base oil production or traditional fuel or energy production).
- Within a life cycle perspective, the total contribution of the management system under consideration is indeed the result of the difference between two different quantities: the impact of the recovery treatment minus the impact of the main avoided system (this latter representing a bonus). The environmental impacts of WO recovery systems are mainly determined by this bonus and less by the direct impacts of the recovery processes themselves.
- The amount of the bonus brought by the avoided process is determined by the choice of the substituted process (this is also the case for other wastes with a high calorific value as plastic wastes).



Especially in the case of the incineration of WO with energy recovery, the type of fuels that the WO replace is crucial: fossil fuel, hydroelectricity, thermal electricity, other wastes....”

- “This explains that, in the LCAs analysed:
 - for almost all environmental impacts considered, incineration in cement kilns (where WO replace fossil fuels) is more favourable than incineration in an asphalt kiln (where WO replace gas oil),
 - a modern regeneration may be, according to the impact considered, more favourable than or equivalent to incineration in an asphalt kiln,
 - compared to incineration in a cement kiln (where WO replace fossil fuels), WO regeneration has environmental advantages and drawbacks depending on the impact considered.

It appears that regeneration would present advantages for all environmental impacts in all scenarios if the WO would replace non fossil fuels (e.g. hydroelectricity, nuclear electricity and maybe other wastes).”

The TNS review also considers the limitations of the studies it reviewed by noting that:

- “The following considerations, which may have a significant influence on the environmental impacts have not been covered by the available studies as well:
 - the situations when WO replace other energy sources or wastes and not traditional fuels at the burning plants,
 - the influence of the base oil quality standard produced and / or regenerated on the environmental impacts of the different management options
- Although one of the studies integrates the analysis of a modern regeneration technology under development, the main results from the reviewed LCA studies are based on today's situation and mean technology.

In view of defining a waste management policy, this can just constitute a starting point. A prospective evaluation, taking into account the possible evolutions of technologies in the mid term, has to be integrated.”

Finally let us consider the 2005 IFEU LCA which is the most recent and most comprehensive LCA undertaken comparing burning of used oil with modern re-refining technologies such as those employed by both Canadian re-refiners.



The 2005 IFEU LCA

The IFEU LCA has focused on addressing the areas identified by the TNS review as requiring additional research. Specifically the IFEU LCA addresses the following recent developments with respect to re-refining and lubricating oil technology:

- *New regeneration technologies with improved performance have been developed and implemented;*
- *Regulatory requirements concerning motor vehicle emissions have enhanced the quality of lubricants;*
- *In today's markets, the amounts of synthetic and semi-synthetic compounds have increased significantly and keep on increasing. These more sophisticated and stable oils require far more energy to manufacture and allow re-refiners to manufacture high quality base oils more easily because the inherent quality of collected used oils is substantially improving.⁴⁹*

Key findings from the IFEU LCA include:

1. Depending on the re-refining technology considered total primary energy savings associated with producing 1 tonne of lubricating base oil from used oil rather than crude oil range from 31.6% to 54.7%.⁵⁰
2. A summary of the relative burdens for re-refining (regeneration) and production of lubricating oil from crude oil (100%) and production of lubricating oil containing 30% PAO (poly-alpha olefins - commonly referred to as "synthetic oils") and 70% virgin base oil is provided in the excerpted figure below.

⁴⁹ IFEU 2005 at pg. 1. Of note while the quality of used oil increases as the amount of used synthetic oil increases as a percentage of the used oil waste stream this benefit is undermined when used oil is contaminated with hazardous wastes as is common in UOMA jurisdictions.

⁵⁰ Calculated from IFEU 2005 Table 7-1 at pg. 39



3. With regard to the TNS Study suggestion that the nature of original base oil (in this case base oil produced from crude oil versus PAO produced synthetically) be factored into consideration of environmental impact, IFEU finds that, “*The change towards more and more synthetic or semi-synthetic compounds in lubricants is significantly reflected in environmental impacts that are increasingly omitted when used oil is regenerated. Primary production of 1 kg of PAO causes more than double CO2 emission than production of 1 kg classical base oil. Semisynthetic compounds (XHVI or HC oils) are found between this range.*”

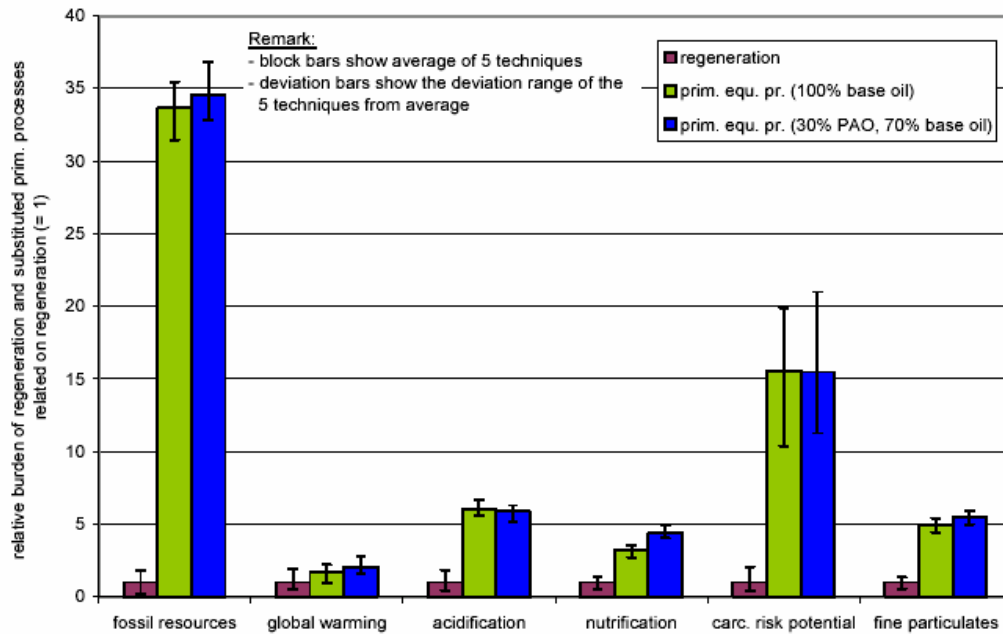


Figure 7-1 Total view on the impact assessment results; all figures related on the particular result of “regeneration”, main bars: average result of the five techniques, deviation bars: range of the five techniques.

4. With regard to comparative environmental profiles of re-refining used oil versus its combustion the IFEU LCA finds that, “*A comparison with direct combustion is done presuming basically the average situation in European cement industry (mainly coal and pet coke as primary fuel)*⁵¹ but also presuming other utilities substituting fuel oil by used oil.

⁵¹ It should be noted that IFEU 2005 has found that the substitution of coal and petroleum coke as fuel in cement kilns by natural gas is most beneficial in terms of reducing greenhouse gas emissions (see Table 7-5 at pg. 47). This finding is supported by a 2001 study by Cimur – Holcim Cimpulung, Romania, *Reduction of greenhouse gases from cement production through combustion optimization in Romania*. The test was undertaken in Cimur’s cement manufacturing facility that utilizes three rotary kilns which can either be fired alternatively or in concert with natural gas, heavy oil or waste oil. The results of Cimur’s tests are summarized below,



- *In the first case, clear advantages concerning “fossil resources”, “acidification”, “toxic air pollutants” favour regeneration. Concerning “nutrification” the discrepancies between regeneration and combustion are low, with the higher ratio of synthetic compounds tipping the scales in favour of regeneration. With weight on a coal substitution by used oil combustion, the relieving effect concerning “global warming” is higher when combusted. But in comparison with the Arcadis/ ifeu [2000] the edge of combustion has significantly diminished: from 1,070 kg CO₂-eq. per Mg used oil to 636 kg (without synthetics) respectively to 396 kg CO₂-eq. (30 % synthetics considered).*
 - *In the second case, the advantages are thoroughly in favour of regeneration or – concerning the scenario without synthetics – disadvantages (global warming and nutrification) are reduced to low significance in relation to the other categories.”*
5. “In summary, re-refining of used oil for recovery of base oils leads to significant resource preservation and relief from environmental burdens.”

“The project team had tested various burning mixtures analyzing the optimum composition in terms of percentage of natural gases and used oils. Burning natural gas instead of oil the fuel consumption can reduce by 8 % the energy consumption, with a reduction in CO₂ emissions by 60 to 75Mt per kiln per day.

The major environmental benefits are related to the reduction of gases emissions. Using the improved combustion process the CO₂ emission was reduced with more than 25,000 T/year and per kiln.

The tests have shown that lower carbon dioxide emissions are favored by burning more natural gas than heavy oil.”



Conclusion

On a factual basis, the UOMA Program Review's methodology and supporting data cannot sustain the conclusion that the made-in-western Canada model is a world leader in maximizing used oil collection and re-refining rates. Further to this, there is strong evidence to suggest that none of the Program Review's three key assertions are valid. Specifically,

1. The UOMA model is not a, "...leader in program design, collection and compensation scheme..." A more complete review of non-UOMA jurisdictions not considered by the Program Review identifies many non-Canadian, non-UOMA jurisdictions that exceed UOMA jurisdictions in used oil recovery performance. With regard to Canadian jurisdictions there is strong evidence that pre-BCUOMA British Columbia and Ontario have experienced used oil and used oil filter recovery rates under their EPR/Polluter pays regulatory régimes that are equivalent or higher than those of UOMA jurisdictions;
2. The contention that "...the made-in-western Canada model is a world leader in maximizing...re-refining rates (30%)" is false. On the contrary there is strong evidence that the BCUOMA program in British Columbia caused the resident re-refiner to loose almost 30% of its provincially derived used oil volume and that UOMA type programs undermine re-refining; and
3. The contention that re-refining used oil and burning it as a waste derive fuel are environmentally equivalent and that, "...there is no "right answer" for the appropriate end use for used oil.", is unsupported. Unbiased, scientific life-cycle inventories and assessments of modern re-refining technologies provide strong evidence that re-refining provides distinct and significant environmental benefits across a wide range of environmental parameters (i.e. air emissions, natural resource consumption etc.) over burning used oil as a waste derived fuel.

Finally we note that surveys and opinion polls are only valuable where the objective to assess how participants and stakeholders "feel" about a given program. Where the primary goal is the objective evaluation of environmental effectiveness and economic efficiency the survey employed by the UOMA Program Review is of little use.

