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July 12, 2000

Roy Brooke
Senior Policy Advisor
Office of the Minister of the Environment
Les Terrasses de la Chaudiere
10 Wellington Street, 28th Floor
Hull, Quebec K1A 0H3

Dear Mr. Brooke:

RE: Legal Implications of Listing Particulate Matter as a Toxic Substance under the CEPA, 1999

I would like to again thank you and Ms. Bjorkquist for meeting with us on July 10th to discuss various issues relating to trucking and the environment. As promised, we will be sending you a briefing note regarding the land freight marketplace.

The purpose of this letter is to share with you information GTA has received regarding potential legal implications arising out of the proposed listing of PM emissions as toxic under the Canadian Environmental Protection Act, 1999 (CEPA). The information, contained in a letter (see attached) to CTA from the legal firm, Gowlings, appears to confirm some of our initial fears raised at our meeting. Gowlings states, *"that the listing of a substance as toxic may have significant and far-reaching implications for those who emit the substance into the environment."*

At the July 10th meeting, we raised concerns over increased liability on the part of motor carriers resulting from the listing of PM10 as a toxic substance. According to Gowlings, *"those who emit PM10 will face heightened exposure to civil actions if it is listed as a Toxic Substance..."* Moreover, Gowlings warns that *"there is a line of jurisprudence which has found that compliance with a regulatory standard does not necessarily afford a defence"* to a civil action.

In addition, Gowlings identifies three other categories of concern:

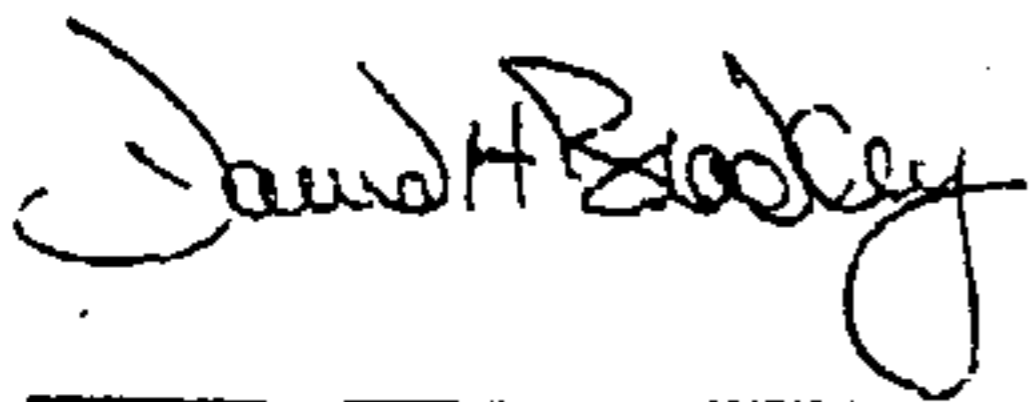
1. **Limitations on Emission by Regulation** — Once a substance is added to the list regulations can be promulgated respecting such things as the quantity and concentration of the substance that can be released from any source; places or areas it may be released; the activity in which it may be released; the manner and conditions of release; maintenance of records; conduct of sampling, analysis, tests, etc.; a pollution prevention plan; and, potentially, measures to eliminate the substance.

2. **Quasi-Criminality of Breach of the Regulations** — A contravention of CEPA 1999 and its regulations is an offence and convictions are subject to significant fines and/or possible imprisonment for officers, directors or agents of a corporation.
3. **CEPA 1999 Special Remedies** — CEPA 1999 provides for a new class of citizen action to compel compliance with legislation or regulation. It also provides that any person harmed by a contravention of the act or regulations may bring action against the offending party for compensation, without proof of negligence or the elements required to establish any other common law tort.

It did not appear to us from our meeting that these matters had been fully considered. Now that we are in receipt of the Gowlings' letter, our concerns are only elevated. It is essential that the proposal to list PM10 be fully and completely evaluated from many perspectives. Moreover, given the above information, it is absolutely imperative that the *PM Assessment Report* be subject to a peer review by an independent body like the Scientific Advisory Board to the U.S. EPA. As discussed at our meeting, we have trouble reconciling Environment Canada's view that based on all scientific evidence the listing of all PM emissions is completely justified, while others, including the Scientific Advisory Board of the US EPA and the Health Effects Institute, have not yet come to the same conclusion. In fact, Environment Canada's own March 2000 report, *The State of Heavy Duty Vehicle Emission Inspection and Maintenance in Canada and the United States*, captures the scientific ambivalence between PM emissions and human health. The report states, "some components of diesel PM are known to be carcinogenic, though the relationship between diesel PM and human health is still poorly understood."

CTA will be expressing these above concerns formally in its written response to the proposed regulation contained in the June 10 *Canada Gazette* 1. However, we think it important that the minister and his staff also consider these issues. We would greatly appreciate it if we could maintain a dialogue on this matter. Thanks in advance.

Sincerely,



David H. Bradley
Chief Executive Officer

DHB:jjd
attach. 1

c: Sara Bjorkquist, Special Assistant, Office of the Minister of the Environment



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August 8, 2000

Danie Dube
 Acting Chief
 Chemicals Evaluation Branch
 Department of the Environment
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Arthur Sheffield
 Team Leader
 Regulatory and Economic Analysis Branch
 Department of the Environment
 Hull, Quebec
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Re: Canada Gazette Part 1, June 10 2000, Order Adding Toxic Substances to Schedule 1 to the Canadian Environmental Protection Act, 1999

Dear Ms. Dube/ Mr. Sheffield:

The Canadian Trucking Alliance (CTA) is very concerned over Environment Canada's regulatory proposal to add particulate matter of less than 10 microns (PM 10) to the list of toxic substances under the Canadian Environmental Protection Act (CEPA).

The Canada Gazette states "*Scientists have concluded that the current state of scientific knowledge, there is ample evidence that Particulate Matter (PM) causes serious human health impacts, and its declaration as toxic is completely justified.*"

This statement is both misleading and incorrect. While there is evidence that suggests a connection between certain levels of PM 10 and negative health impacts, there is also conflicting scientific evidence that raises questions regarding the direct relationship between PM 10 and negative health impacts. To state that the listing of PM 10 as toxic is "*completely justified*" is, in CTA's opinion, incorrect and unsubstantiated.

According to scientific research conducted by the Health Effects Institute (HEI) and the Scientific Advisory Board (SAB) of the US Environmental Protection Agency (EPA) there is evidence that the labeling of all PM emissions as toxic is premature. Furthermore, we attach a peer review of Environment Canada's Assessment Report for PM10, conducted for CTA by the environmental toxicology and risk assessment experts, GlobalTox. This peer review supports CTA's belief that the labeling of all PM emissions as toxic is premature.

Moreover, CTA also obtained the attached legal advisory from *Gowlings* regarding the possible legal ramifications of listing PM10 as toxic. The possibility of class action lawsuits brought against producers of PM10 due to Environment Canada's listing of PM10 will be heightened. Moreover, by listing PM10 as toxic Environment Canada may lose control as a regulator regarding "floor and

ceiling" emission policy control measures. The courts may assume this policy role. The trucking industry does not believe this to be a wise shift in regulatory control from elected officials to appointed justices.

Based on the above, CTA urges Environment Canada to not list PM emissions as toxic under CEPA. Based on the scientific evidence to date, the listing of PM10 as toxic is at best premature. Moreover, it does not appear that Environment Canada has fully contemplated the legal implications of such a move. To carry forward regardless would be reckless on the part of Environment Canada.

The remainder of this document will be broken into four parts. The first part will provide a synopsis of the scientific findings of HEI and the SAB regarding PM 10. The second part will provide a summary of GlobalTox's peer review of *Environment/Health Canada's Assessment of Respirable Particulate Matter Less Than or equal to Ten Microns (PM10) under CEPA*. The third part of the document will review *Gowlings'* legal advice concerning the possible implications of listing PM 10 as toxic. The final portion of this submission will examine what the trucking industry and rail industry is and will be doing to reduce PM 10 emissions.

Part I: Synopsis of HEI & SAB Findings Regarding PM 10

Who is HEI? — HEI was established in 1980 as an independent and unbiased source of information on the health effects of motor vehicle emissions. HEI supports research on all major air pollutants. Consistent with its mission to serve as an independent source of information on the health effects of motor vehicle and other pollutants, the Institute also engages in special review and evaluation activities. Typically, HEI receives half its funds from the U.S. EPA and half from 28 manufacturers and marketers of motor vehicles and engines in the United States. However, HEI exercises complete autonomy in setting its research priorities, conducting evaluation and in disbursing its funds.

- **HEI Study: Diesel Exhaust: A Critical Analysis of Emissions, Exposure and Health Effects A Special Report by the Health Effects Institute, October 1997 ---**

In this work HEI conducted a full literature review of over 30 epidemiologic studies of workers exposed to diesel emissions in occupational settings for the period 1950 through the early 1980s. HEI concluded: "The epidemiologic data are consistent in showing weak associations between exposure to diesel exhaust and lung cancer." Furthermore, HEI concluded that using this data to estimate the magnitude of the cancer risk is limited because: (1) No epidemiologic study has included quantitative measurements of past exposures of the study subjects. HEI did concur with previous findings regarding the carcinogenic activity in rats exposed to diesel emissions. However, HEI suggests that the lung tumours observed in rats exposed to high concentrations of diesel emissions may be due to a species-specific response to inhaled particulate matter rather than a carcinogenic mechanism that also occurs in humans. This hypothesis is based on tests that showed that prolonged exposure to diesel emissions does not produce lung tumours in hamsters, and the results in mice are equivocal, which suggests that species-specific factors play a critical role in the induction of lung tumours by diesel emissions. Furthermore, regarding impacts on rats, HEI found that lung tumours are only produced after nearly lifetime exposures for 35 hours or more per week to high concentrations of diesel exhaust particulate matter. These concentrations are approximately three orders of magnitude higher than current estimates of average atmospheric concentrations of diesel exhaust particulate matter. Under more realistic intermittent exposure conditions (eight hours per day, five days per week), the model predicts that the concentration of particulate matter needed to impair lung clearance is only currently limited to miners.

- **HEI Study: National Morbidity, Mortality and Air Pollution Study (NMMAPS), June 2000.**
HEI funded the study to characterize the effects of airborne particles less than 10 mm (PM₁₀)

alone and in combination with gaseous air pollutants in a consistent way, in a large number of cities. The study found that in a large number of cities an average of approximately 0.5 per cent increase in overall mortality for every 10-ug/m³ increase in PM₁₀ measured the day before death. However, some differences in PM₁₀ effect on mortality were seen by region of the US --- the largest impact was evident in the Northeast. The investigators did not identify any factor or factors that might explain these differences. HEI comments on these findings: *"This analysis is an important first step, and further evaluation of the reasons for these regional differences will advance our understanding of the association between PM₁₀ and mortality. The heterogeneity of effect across cities offers the potential to identify factors that could influence effects of PM10 on health and thus provide valuable insights into the mechanisms by which PM10 causes adverse health effects."* However, even with this finding HEI did not directly link all levels of PM emissions to the denigration of human health. HEI states: *"The theoretical and actual analysis generally appear to refute the criticisms that exposure measurement error could explain the associations between PM and adverse health effects. The general absence of measured exposure data, however, precludes making firm conclusions as to the specific effects of the errors. HEI, EPA and other organizations are currently funding research to obtain more exposure data that should lead to more confident specific conclusions regarding the effect of any exposure measurement error."*

Who is the Scientific Advisory Board (SAB)? — The US Environmental Research Development, and Demonstration Authorization Act (ERDDAA) established the SAB in 1978. SAB is made up of distinguished scientists, engineers and economists who are recognized, non-governmental experts in their respective fields. In carrying out the mandate of ERDDAA, the SAB provides scientific advice as may be requested by several government agencies including the EPA. EPA has placed a premium on basing its regulations on a solid scientific foundation. Consequently, over the past 16 years the SAB has assumed growing importance and stature. It is now formal practice that many major scientific points associated with environmental problems are reviewed by the SAB.

What Is The Mandate of SAB — The EPA is responsible for protecting the interests of the US federal government in environmental matters. At times, the EPA has been accused of being over enthusiastic. The EPA admits in its own words that in pursuit of its mandate at times it may act without full scientific support of the need to act. The SAB acts as a tempering element in these matters. The EPA states on its Website: *"The SAB recognizes that EPA is sometimes forced to take action to avert an emerging environmental risk before all of the rigors of scientific proof are met. To delay action until the evidence amounts to incontrovertible proof might court irreversible ecological and health consequences. In such cases, the Agency makes certain assumptions and extrapolations from what is known in order to reach a rational science policy position regarding the need (or lack thereof) for regulatory action. Here, the SAB serves as a council of peers to evaluate the soundness of the technical basis of the science policy position adopted by the EPA."*

- **SAB Review of EPA's Health Assessment Document for Diesel Emissions** — This review was released on February 4, 2000. SAB did not concur with the EPA's statement that there is a direct correlation to diesel PM and negative human health. The SAB states: *"There was also substantial disagreement with the use of the descriptor "highly" to modify the category "likely" used to describe the potential carcinogenicity of environmental exposures to diesel emissions. The majority of the Panel (SAB) did not agree that the current level of confidence regarding the exposure-response relationship from occupational exposures warranted the discretionary use of the term "highly" to describe the confidence regarding the cancer hazard from environmental exposures. The panel agreed with the Agency's (EPA) judgment that a quantitative estimate of unit risk for human lung cancer from environmental exposures to diesel emissions could not be made with an adequate level of confidence at this time, and viewed the source of that lack of confidence as also conflicting with the characterization of hazard as "highly likely... The Panel acknowledges the difficulty of dealing with the linkage between diesel particulate matter (DPM) emissions and ambient PM on the basis of*

current knowledge...Overall, discussion of the linkages between health hazards from DPM and the combination of DPM and other ambient PM still needs strengthening."

- **SAB Review of EPA's Health Assessment Document for Diesel Emissions** — In this document SAB instructs EPA to make a clear distinction between the negative health impacts of PM 10 in general and levels of PM 10: *"Although PM undoubtedly poses health and environmental hazards at some level of exposure, the NAAQS must ultimately focus on, and be defended on the basis of, limiting the level of risk."* SAB expands on this issue, an issue CTA believes is a critical argument against Environment Canada listing all PM 10 as toxic: *"Throughout the toxicology chapter, it is important to maintain a focus on exposure-dose-response relationships, and to put the findings in context regarding ambient inhalation exposures. No findings should be discussed without mention of the exposure mode and dose. Premium should be placed on conveying an understanding of effects, mechanisms, susceptibility, etc. in the context of the likelihood that the phenomena would occur at current ambient exposures."*

Part II: GlobalTox Review of Environment/Health Canada's Assessment of Respirable Particulate Matter Less Than or Equal to Ten Microns (PM₁₀) under CEPA (Assessment). July, 00.

Background — Based on the above information from HEI and SAB, CTA was not confident that Environment Canada was using all available science to base its decision to list PM 10 as toxic. After reviewing Environment and Health Canada's PM 10 Assessment document, CTA's concerns appeared to be validated. To completely validate this concern, CTA contracted Dr. Ronald W. Brecher of GlobalTox to perform a peer review of the Assessment document.

Who is GlobalTox? — GlobalTox is a privately owned international corporation providing services in industrial hygiene, human and environmental toxicology and risk assessment. GlobalTox clients include U.S., Canadian, and other national governments, corporations and non-governmental organizations. Appropriate certifying bodies certify the principals of GlobalTox. The current president of GlobalTox was recently appointed by Canadian Health Minister Alan Rock to serve as a member of the Expert Advisory Committee on Natural Health Products.

Who is Dr. Ronald W. Brecher? — Dr. Brecher is a principal of GlobalTox. Dr. Brecher obtained his PhD in Medicinal Biochemistry from Sussex University in 1987. He became a Diplomat of the American Board of Toxicology in 1991. In 1992 he became a voting member of the Canadian Standards Association. He is a member of several professional societies and institutes, including the Society of Toxicology of Canada (STC), the American Society of Toxicology and the University of Waterloo's Institute for Risk Research. Dr. Brecher has over eleven years of experience as a senior consultant in toxicology, with an emphasis on assessing and communicating human health impacts of chemicals, particularly contaminants commonly found in drinking water and in air.

Findings of GlobalTox's Peer Review of Environment/Health Canada's Assessment Report Regarding PM 10 — A number of key issues were identified by GlobalTox's (GT) review. Some of these concerns are highlighted below, along with GT's conclusion. GT's report in full is attached to this document.

- **Weight-of-Evidence** — In the report GT outlines its philosophy in approaching a scientific assessment *"The conclusion of a scientific assessment should be dictated by the weight of scientific evidence, and not by the most extreme (positive or negative) findings."* Using this approach to evaluate the Assessment Report GT determined: *"... based on the data presented in the report, it does not appear as though it considered all the available evidence on the health effects associated with PM₁₀. The document does not acknowledge a number of reports, which bring into question the reliability of the data upon which PM₁₀ health effect assessments are based. The report also does not sufficiently address the availability of data suggesting negative or non-significant associations of PM₁₀ with specific health effects. Though the "weight-of-evidence" appears to support a weak association between PM₁₀ and some health effects, the magnitude and possible causal nature of these associations remain uncertain.*

- Control of Confounding Variables** — Based on existing scientific evidence there appear to be numerous variables impacting the assessment of PM 10 and negative health impacts. In the opinion of GT the Assessment Report does not sufficiently deal with this issue. GT explains the significance of this neglect: "Given the complexity of assessing the health effects associated with PM₁₀, and the important fact that one is assessing a complex mixture, we were surprised at the cursory manner in which confounding factors are considered in this assessment ... Given the very important role that these variables might have on the analysis of the potential health effects associated with PM₁₀, this very brief qualification is not sufficient to provide the reader with an appropriate degree of confidence concerning the data and conclusions presented by the report. As presented, it is not possible to ascertain if all potential confounding variables were appropriately considered, and consequently, whether the findings are entirely due to PM₁₀ toxicity. This is extremely important, given the manner in which the report discounts the findings of some studies suggestive of negative associations between PM₁₀ exposures and specific health effects... Consequently, though the report may present sufficient evidence to suggest a weak association between PM₁₀ exposure and a multitude of health effects, it is important to stress that the support for such associations are weak at best, and that further investigations into these associations are warranted. As such, it is our opinion that the data presented in support of the report's conclusion are limited and many not be representative of the true risk of PM₁₀."
- Uncertainty Concerning Risk Characterization** — Despite the level of uncertainty in the scientific community regarding PM 10 and negative health impacts, the Assessment Report strongly concludes that all PM 10 should be labeled as toxic under CEPA. CTA disagreed with this strong conclusion based on the fact that the Assessment Report did not explain why it was dismissing conflicting reports regarding the weak association between PM 10 and human health. GT concurs with CTA's opinion: "The strength with which the conclusions are presented in the report is surprising, given the uncertainties discussion, presented under Section 3.1.4 of the report. The level of uncertainty in our understanding of the potential health effects associated with PM₁₀ remains high, and this report presents little information to address these uncertainties. However, in spite of these very significant uncertainties, the conclusions presented in the report are stated definitively, and the level of confidence in the conclusions is reported to be "moderate to high" based on the "sufficient weight-of-evidence... The report's rather definite conclusions do not appropriately reflect this level of uncertainty."
- Assessment Report Should Have Concluded More Study Is Needed** — CTA is of the opinion that the Assessment Report does not make a strong case for listing all PM as toxic. The GT report support's CTA's position: "Based on this review, it appears as though this report can only support the need for additional work with respect to the evaluation of the health risks associated with PM₁₀. As such, the need for an assessment of the potential health risks associated with PM₁₀ still remains."
- GlobalTox Conclusion** — "GLOBAL TOX concludes that there is significant uncertainty associated with the conclusions presented in the Environment/Health Canada PSL2 report on PM₁₀. The strength of association between a number of the health effects and PM₁₀ is weak at best, and further work is required to elucidate the biological plausibility of these associations. Though PM₁₀ may be associated with specific health effects, the confirmation of, and risks related to, such associations are poorly characterized. Although the conclusions presented by the study might support "a reasonable basis for preventative action", they give a misleading impression as to the degree of confidence afforded by the available database."

Part III: Gowling's Advice Concerning Possible Legal Implications of the Listing of PM 10 as Toxic Under CEPA

Background — After reviewing CEPA 1999, CTA was of the opinion that the listing of PM 10 as toxic may unnecessarily expose producers of PM10 to class action lawsuits. This opinion was based on experiences in California. The staffs of the California Air Resources Board (CARB) and the Office of Environmental Health Hazard Assessment (OEHHA) listed diesel PM in that state as toxic in 1998. That same year a lawsuit was brought against several grocery chains that operated private trucking

fleets. After two years in litigation, the environmental lawsuit against these California grocery chains was settled in April of this year. No improvement in soot emissions was achieved by this settlement but the legal team behind the suit cleaned up to the tune of nearly a million dollars. The settlement mandates replacing current diesel fleets with power units that put out the same amount of soot and are no cleaner than the standards mandated by the California Air Resources Board since 1994—standards the trucking industry already complies with. The April 28 settlement also mandates that the grocery chains pay out over \$US 15,000,000 for conversions, nearly \$US 4,000,000 of which will be subsidized by the taxpayers. This action circumvents CARB and puts the power of regulation into the hands of the legal teams, who also reaped a huge windfall from the deal. Based on this experience CTA has two concerns: (1) Owners of PM 10 producing sources will be subject to similar lawsuits in Canada (2) The courts and not Environment Canada will become the regulator of emissions in Canada. To establish if these concerns are warranted, CTA contracted the legal firm of *Gowlings* to advise the association of the possible implications of listing PM10 as toxic under CEPA 1999. Mark Madras of *Gowlings* provided this advice.

Mark Madras Professional Biography — Mark Madras is a senior member of the *Gowlings'* Environmental Law and Transportation Law Practice Groups. Called to the Ontario Bar in 1976, Mr. Madras received his law degree from Osgoode Hall Law School. Prior to joining *Gowlings*, he was a partner with Saul, MacLeod & Madras. He is certified by the Law Society of Upper Canada as a Specialist in Environmental Law and is recognized by the Lexpert Canadian Legal Directory as a leading practitioner in Canada of environmental and transportation law. Mr. Madras is President of the Association for Transportation Law, Logistics and Policy, an organization of over 1,200 lawyers and transportation professionals from across North America. Mr. Madras is a member of the Law Society of Upper Canada, the Environmental Law Section of the Canadian Bar Association (Ontario) (a former member of the Executive of the Section), the Canadian Transport Lawyers' Association (a former Ontario Director and member of the national Executive), the Transportation Lawyers Association, the Arbitration and Mediation Institute of Ontario Inc. (former member of the Board of Directors, a founder of the Environmental Section, and former Chair of the Transportation Section). He currently serves on the Board of Directors of Pollution Probe.

- **Civil Liability Risks Arising from the Emission of Toxic Substance** — Based on *Gowlings'* opinion it would appear that both of CTA's concerns appear to be legitimate. *Gowlings* explains: *"It may be argued that a person emitting a Toxic Substance has a heightened duty of care to take all reasonable measures to prevent harm to others. It may be expected that those who may claim that they have been harmed by the emission of PM10 would advance the proposition that the listing of PM10 as a Toxic Substance places those who emit PM 10 on notice that the emissions present a significant risk of harm and they ought to have acted accordingly to avoid or eliminate such emissions. Those who allege that they have been injured as a consequence of the emission of PM 10 can be expected to assert breach of a heightened level of responsibility, if not indeed strict liability to ensure such harm does not occur. There should be little doubt that a heightened exposure for liability for resulting harm will exist for those who emit PM 10."*
- **Adherence to Environment Canada Regulations No Longer Minimum Standard** — *Gowlings* concurred with CTA's opinion that Environment Canada may no longer be the determining regulator for emission level control should PM be listed as toxic. *Gowlings* explains: *"You should also be aware that there is a line of jurisprudence which has found that compliance with a regulatory standard does not necessarily afford a defense. Accordingly, if CEPA 1999 establishes PM10 emission regulations, compliance with those regulations would not necessarily be a*

defense to a civil action; the governing principle pursuant to this jurisprudence is whether adherence to the regulation required the result. In this situation, the emission of PM10 to a regulatory standard would not be mandatory, accordingly compliance with the regulatory standard would not be a basis for a defense."

- Listing PM 10 As Toxic Has Serious Implications** — The listing of PM as toxic is not an insignificant policy initiative. The listing of PM10 as toxic has very serious ramifications for producers of PM10. *Gowlings* explains: "In our view, if PM10 is listed as a Toxic Substance, it will likely have significant implications for those who emit PM10. The emission of PM10 may be subject to stringent regulation and may require the preparation of and adherence to pollution prevention plans. A violation of a Toxic Substance regulation governing PM 10 emissions under CEPA may result in quasi-criminal prosecution. The offending entity and its officers and directors may be subject to financial penalties and offending individuals may be subject to incarceration. Citizens may be empowered to commence environmental protection actions if the Crown fails to enforce compliance with its regulations. Non-compliance with CEPA 1999 or its regulations may be sufficient basis to found an action for damages resulting from PM10 emissions. The listing of PM10 as a Toxic Substance arguably leads to a higher duty of care for the emitters of PM10, and indeed may place those who emit PM10 in a strict liability position, one in which the issues of negligence or nuisance are irrelevant; if damage is caused, then there is liability. In our view, those who emit PM10 will face heightened exposure to civil actions if it is listed as a Toxic Substance. The proposed regulation of PM 10 under CEPA 1999 as a Toxic Substance should be presumed to be a significant step. Its significance for PM10 emitters should not be underestimated, and warrants careful evaluation."

Part IV: PM Inventory in Canada. Does Listing PM10 As Toxic Help To Address The Main Source Of The Pollutant?

Background — Heavy-duty diesel engines (HDDV) are a producer of PM10. But are HDDV a significant contributor to the overall PM10 inventory in Canada? The answer is no, based on the work contained in the 2000 Report of the Federal Commissioner of the Environment and Sustainable Development. In his recent report the commissioner addressed the issue of PM emissions levels in Canada. The commissioner highlighted how PM emissions fell between 1987 to 1997 only recently experiencing a rise. The commissioner also noted the regional aspect of PM emissions. Listed below is the total PM inventory in Canada.

Total PM Inventory in Canada			
PM Source	Source Percentage	PM Source	Source Percentage
Dust from Unpaved Roads	38%	Forest Fires	39%
Agriculture tilling and wind erosion	16%	Dust from Unpaved Roads	20%
Forest Fires	13%	Residential fuel wood combustion	9%
Construction Operations	10%	Dust from Paved Roads	9%
Dust from Paved Roads	10%	Wood Industry	4%
Agriculture/Animals	3%	Pulp and Paper Industry	3%
Residential fuel wood combustion	3%	Heavy duty diesel vehicles	2%
Wood Industry	2%	Prescribed burning	2%
Pulp and paper industry	1%	Other Industries	2%
		Agriculture/Animals	2%
		Railway Locomotives	1%
		Other off-highway diesel engines	1%

Based on the above table it is clear that the transportation industry, truck and rail have a role to play in reducing the national PM10 inventory. (It is interesting to note that although there are over 700,000 trucks in Canada and only 4,000 locomotives, trucks only equate to 2 per cent of total PM10 and locomotives 1 per cent). However, based on the above the transportation industry has but a small role to play in the overall reduction plan vis-a-vis other sectors. The main source of PM10 is dust from unpaved roads.

How Does Listing of PM10 As Toxic Help Reduce PM10 From Unpaved Roads — As presented in this document the listing of PM10 as toxic places a greater legal burden on the producers of PM10. As such, producers of PM10, as the California case exhibited, will have to take added precautions, beyond current regulatory standards to ensure that PM10 emissions are limited to the fullest extent possible. As such, is it Environment Canada's intention to force municipalities throughout Canada to pave all their gravel roads? However, this may not be enough as dust from paved roads also plays a significant factor in total PM10 emissions. So is it the intention of Environment Canada for our nation to not only have every road in Canada paved, but to also have the cleanest roads on the globe? CTA does not understand the policy rationale for listing PM10 with regards to intended PM10 reduction.

Concluding Remarks

Based on the conflicting scientific evidence provided in this report from the HEI and the EPA's SAB, CTA believes that Environment Canada's listing of PM10 as toxic under CEPA is premature. A 1997 HEI study concluded: *"The epidemiologic data are consistent in showing weak associations between exposure to diesel exhaust and lung cancer."* A June 2000 HEI study found a stronger correlation between PM10 and negative health impacts but stopped far short from describing all PM10 as toxic as more scientific work is needed: *"The general absence of measured exposure data, however, precludes making firm conclusions..."* HEI's work is further supported by comments made by the EPA's SAB related to PM10 and negative health impacts: *"Overall, discussion of the linkages between health hazards from DPM and the combination of DPM and other ambient PM still needs strengthening."*

The work performed by HEI and EPA's SAB on the subject of PM10 and negative health impacts lead CTA to question the validity of the conclusion contained Environment and Health Canada's PM 10 Assessment document that PM10 should be listed as toxic. To confirm the accuracy of CTA's concern, the association contracted GlobalTox to perform a peer-review of Health/Environment Canada's Assessment Report of PM10. GlobalTox validated CTA's concerns *"GLOBALTOX concludes that there is significant uncertainty associated with the conclusions presented in the Environment/Health Canada PSL2 report on PM₁₀. The strength of association between a number of the health effects and PM₁₀ is weak at best, and further work is required to elucidate the biological plausibility of these associations."*

Beyond the argument of scientific accuracy, Environment Canada's listing of PM10 as toxic may bring about serious changes to the legal and policy landscape of Canada. After reviewing CEPA 1999, CTA was of the opinion that the listing of PM 10 as toxic may unnecessarily expose producers of PM10 to class action lawsuits. The legal firm *Gowlings* concurred with CTA *"There should be little doubt that a heightened exposure for liability for resulting harm will exist for those who emit PM 10... compliance with a regulatory standard does not necessarily afford a defense."*

Consequently, if Environment Canada proceeds in its commitment to list PM10 as toxic not only would it be in error, it would be needlessly exposing owners of PM10 source pollutants to potential lawsuits --- legal actions that will eventually weaken the regulatory authority of the agency. CTA would recommend that Environment Canada take the following actions regarding the issue of PM10:

- 1. Do not list of PM10 as toxic under CEPA.**
- 2. During the next review of CEPA create a new category for controlled substances.**

3. **Once the new category of controlled is established, list PM10 as a "controlled" substance under CEPA.**

If Environment Canada were to proceed in the manner prescribed by CTA the department would eliminate all the concerns outlined in this document while still increasing its power to reduce emissions.

Sincerely,



David H. Bradley
CEO

DHB:jjd

attachs. 2

GOWLINGS

July 10, 2000

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Dear Mr. Laskowski:

Re: Particulate Matter

This is in response to your request for our advice concerning the possible implications of the listing of particulate matter less than or equal to 10 microns ("PM10") as a Toxic Substance under the *Canadian Environmental Protection Act, 1999* ("CEPA 1999").

Under CEPA 1999, the Governor-in-Council, on the recommendation of the Ministers of Environment and Health, may make an Order adding a substance to the List of Toxic Substances. (CEPA 1999, s. 90) A substance may be listed as toxic if it meets the following definition:

"... a substance is toxic if it is entering or may enter the environment in a quantity or concentration or under conditions that

- (a) have or may have an immediate or long-term harmful effect on the environment or its biological diversity;
- (b) constitute or may constitute a danger to the environment on which life depends; or
- (c) constitute or may constitute a danger in Canada to human life or health." (CEPA 1999, s. 64)

We believe that the listing of a substance as a Toxic Substance under CEPA 1999 may have significant and far-reaching implications for those who emit the substance into the environment. We have identified four main categories of concern:

1. Limitations on emission by regulation;
2. Quasi-criminal consequences for violations of CEPA 1999 or its regulations;

3. CEPA 1999 special remedy provisions; and
4. Civil liability risks related to the emission of a Toxic Substance.

We will address each category of concern in turn.

Limitations on Emissions

Once a substance is added to the list of Toxic Substances the Governor-in-Council may make regulations regulating the substance. Accordingly, federal jurisdiction would then extend to emissions of PM10. This may include regulations respecting:

- (a) The quantity or concentration of PM10 that may be released into the environment, either alone or in combination with any other substance, from any source or type of source;
- (b) The place or areas where PM10 may be released;
- (c) The activity in the course of which PM10 may be released;
- (d) The manner in which and conditions under which PM10 may be released into the environment, either alone or in combination with any other substance;
- (e) The submission of information relating to the release of PM10 to the government;
- (f) The maintenance of books and records and the conduct of sampling, analysis, tests, measurements or monitoring of PM10 emissions. (CEPA 1999, s. 93(1))

As well, once a substance is added to the List of Toxic Substances, the federal Minister of the Environment may require "any person or class of persons ... to prepare and implement a pollution prevention plan". (CEPA 1999, s. 56)

CEPA 1999 also contains provision for the implementation of measures to lead to the virtual elimination of certain toxic substances. Such regulations would have to be grounded upon a finding that PM 10 may have a long term harmful effect on the environment, is persistent and bio-accumulative in accordance with the regulations, and is inherently toxic to human beings or non-

human organisms as determined by laboratory or other studies, and is present in the environment primarily as a result of human activity. (CEPA 1999, s. 77(3) and (4))

Notice of the regulatory action intended to be taken is required to be given in the Canada Gazette.

Quasi-Criminality of Breach of the Regulations

A contravention of CEPA 1999 and its regulations is an offence. The Crown may proceed either by indictment or by summary conviction. If the Crown proceeds by indictment the maximum fine is \$1 million, and a penalty of imprisonment of up to three years may also be imposed. If the Crown proceeds by summary conviction, the maximum fine is \$300,000, and the Crown may seek a term of imprisonment of up to six months.

~~CEPA 1999~~ also provides that where a corporation commits an offence, "any officer, director or agent of the corporation who directed, authorized, assented to, acquiesced in or participated in the commission of the offence is a party to and guilty of the offence". Officers and directors are required to take all reasonable care to ensure compliance with the Act and its regulations, failing which they would be guilty of an offence under CEPA 1999.

CEPA 1999 Special Remedies

CEPA 1999 provides for a new class of citizen action to compel compliance with the legislation and the regulations. Such an action is called an "environmental protection action". A citizen may initiate an environmental protection action where the Crown has failed to enforce the Act. The action may seek an order directing measures to be taken to rectify non-compliance as well as to secure a plan to correct or mitigate harm to the environment.

CEPA 1999 also provides that where there is a release of a Toxic Substance in contravention of a regulation responsible persons are required to take all reasonable measures to prevent a further release and to mitigate the dangers to the environment or to human life or health that may result from the release.

Furthermore, CEPA 1999 contains a provision that where there has been a contravention of the Act or the regulations, any person who has suffered loss or damage as a result may bring an action against the offending party for compensation for the damage proved to have been suffered as a result of the contravention, as well as an amount to compensate for legal costs associated with the action. Accordingly, a violation of the Act or the Regulations is a sufficient basis for an action, without requiring proof of negligence or the elements required to establish any other common law tort.

Civil Liability Risks Arising from the Emission of a Toxic Substance

It may be argued that a person emitting a Toxic Substance has a heightened duty of care to take all reasonable measures to prevent harm to others. It may be expected that those who may claim that they have been harmed by the emission of PM10 would advance the proposition that the listing of PM10 as a Toxic Substance places those who emit PM10 on notice that the emissions present a significant risk of harm and they ought to have acted accordingly to avoid or eliminate such emissions. Those who allege that they have been injured as a consequence of the emission of PM10 can be expected to assert a breach of a heightened level of responsibility, if not indeed strict liability to ensure such harm does not occur. There should be little doubt that a heightened exposure for liability for resulting harm will exist for those who emit PM10.

You should also be aware that there is a line of jurisprudence which has found that compliance with a regulatory standard does not necessarily afford a defence. Accordingly, if CEPA 1999 establishes PM10 emission regulations, compliance with those regulations would not necessarily be a defence to a civil action; the governing principle pursuant to this jurisprudence is whether adherence to the regulation required the result. In this situation, the emission of PM10 to a regulatory standard would not be mandatory, accordingly compliance with the regulatory standard would not be a basis for a defence.

Conclusion

This report is not intended to be construed as a legal opinion concerning the liability of those who emit PM10, but rather is intended to identify issues which should be considered as matters of serious concern in any discussion concerning the Toxic Substance designation of PM10.

In our view, if PM10 is listed as a Toxic Substance, it will likely have significant implications for those who emit PM10.

The emission of PM10 may be subject to stringent regulation and may require the preparation of and adherence to pollution prevention plans. A violation of a Toxic Substance regulation governing PM10 emissions under CEPA may result in quasi-criminal prosecution. The offending entity and its officers and directors may be subject to financial penalties and offending individuals may be subject to incarceration. Citizens may be empowered to commence environmental protection actions if the Crown fails to enforce compliance with its regulations.

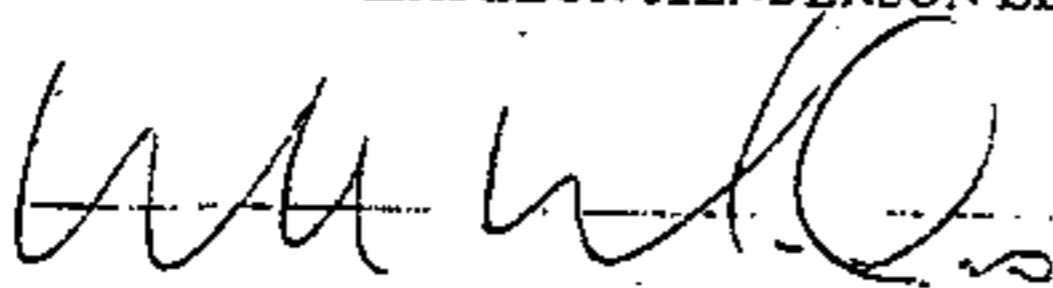
Non-compliance with CEPA 1999 or its regulations may be a sufficient basis to found an action for damages resulting from PM10 emissions. The listing of PM10 as a Toxic Substance arguably leads

to a higher duty of care for the emitters of PM10, and indeed may place those who emit PM10 in a strict liability position, one in which the issues of negligence or nuisance are irrelevant; if damage is caused, then there is liability. In our view, those who emit PM10 will face heightened exposure to civil actions if it is listed as a Toxic Substance.

The proposed regulation of PM10 under CEPA 1999 as a Toxic Substance should be presumed to be a significant step. Its significance for PM10 emitters should not be underestimated, and warrants careful evaluation.

Yours very truly,

GOWLING LAFLEUR HENDERSON LLP



Mark L. Madras

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July 10, 2000



GLOBALTOX

July 25, 2000

Mr. Stephen Laslowski
Director, Policy Development
Canadian Trucking Alliance
555 Dixon Road
Toronto, Ontario M9W 1H8

BY REGULAR MAIL AND E-MAIL

Dear Mr. Laslowski:

Re: Review of Environment/Health Canada's Assessment of Respirable Particulate Matter Less Than or Equal to Ten Microns (PM₁₀) under the Canadian Environmental Protection Act (CEPA)

Introduction

GLOBALTOX was retained by the Canadian Truckers Alliance (CTA) to conduct a review of Environment and Health Canada's evaluation of Respirable Particulate Matter Less Than or Equal to Ten Microns (PM₁₀) as a Priority Substance under the Canadian Environmental Protection Act (CEPA).

The following letter-report outlines GLOBALTOX's comments on the following document:

Environment and Health Canada. 2000. Canadian Environmental Protection Act, 1999 – Priority Substances List Assessment Report: Respirable Particulate Matter Less Than or Equal to 10 Microns.

Disclaimer

This letter-report was prepared by GLOBALTOX INTERNATIONAL CONSULTANTS INC. for the CTA. The material in it reflects GLOBALTOX's best judgment in light of the information available to GLOBALTOX at the time of preparation. Any use which a third party makes of this report, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. GLOBALTOX accepts no responsibility for damages, if any, suffered by any third parties as a result of decisions made or actions taken based on this report.



Rationale for Inclusion of PM₁₀ on the Second Priority Substances List (PSL2)

There are three definitions of "toxic" under CEPA, which are set out in Part 5 (Section 64) of the Act, namely¹:

"A substance is toxic if it is entering or may enter the environment in a quantity or concentration or under conditions that:

- (a) have or may have an immediate or long-term harmful effect on the environment or its biological diversity;
- (b) constitute or may constitute a danger to the environment on which life depends; or
- (c) constitute or may constitute a danger in Canada to human life or health."

The rationale for the inclusion of PM₁₀ on the second Priority Substances List (PSL2) was as follows²:

"Exposure to respirable particulate matter in the Canadian environment is widespread. Sources include vehicle exhaust, construction, industrial air pollution and the bulk shipping of minerals. Small particles, irrespective of their origins, are trapped in the lungs. Effects associated with ambient exposure to respirable particulate matter include respiratory and pulmonary health dysfunction which can lead to school absenteeism and increased hospital admissions. An assessment is needed to evaluate health risks."

The above paragraph makes the following assertions concerning adverse effects of PM₁₀ on human health:

- Ambient exposures to PM₁₀ may be associated with respiratory and pulmonary health dysfunction.
- Exposures can lead to school absenteeism and increased hospitalisation.

These effects-related statements will be evaluated in the remainder of this letter-report.

Key Issues Identified From Critical Review

A number of key issues were identified during GLOBALTOX's review of the PSL2 assessment report on PM₁₀. These are summarised below:

Weight-of-Evidence

Scientific investigations can yield apparently conflicting or inconsistent information. Different investigators focus on different questions, use different methods, and interpret their data in

¹ Canadian Environmental Protection Act (CEPA), 1999 – Statutes of Canada 1999, Chapter 33. Environment Canada, 1999, p. 39.

² Report of the Ministers' Expert Advisory Panel on the Second Priority Substances List Under the Canadian Environmental Protection Act (CEPA), PSL2 Secretariat, October, 1995, p. 15.



different ways. Therefore, it is important to evaluate all relevant scientific information in arriving at a conclusion on any particular question. The conclusion of a scientific assessment should be dictated by the weight of scientific evidence, and not by the most extreme (positive or negative) findings.

It was interesting to note that a number of the conclusions presented in the report refer specifically to the "weight-of-evidence" with respect to the potential health effects associated with PM_{10} exposure. However, based on the data presented in the report, it does not appear as though it considered all the available evidence on the health effects associated with PM_{10} . The document does not acknowledge a number of reports which bring into question the reliability of the data upon which PM_{10} health effects assessments are based. The report also does not sufficiently address the availability of data suggesting negative or non-significant associations of PM_{10} with specific health effects. Though the "weight-of-evidence" appears to support a weak association between PM_{10} and some health effects, the magnitude and possible causal nature of these associations remain uncertain.

The uncertainty around whether the entire "weight-of-evidence" is considered in this report may be due to the fact that the approach to the identification and review of studies is not clearly presented. It is not evident if the report considered a number of findings presented in several studies which would appear to suggest that the association of specific health effects with PM_{10} exposure remains uncertain. Therefore, it is not clear whether the literature reviewed in support of this report was representative of the full spectrum of findings with respect to the particular issues under discussion.

Control of Confounding Variables

Given the complexity of assessing the health effects associated with PM_{10} , and the important fact that one is assessing a complex mixture, we were surprised at the cursory manner in which confounding factors are considered in this assessment. When presenting data, the report simply states that "confounding risk factors were taken into account in the analysis", or words to that effect. A description of the specific confounding variables considered is never clearly provided. Given the very important role that these variables might have on the analysis of the potential health effects associated with PM_{10} , this very brief qualification is not sufficient to provide the reader with an appropriate degree of confidence concerning the data and conclusions presented by the report. As presented, it is not possible to ascertain if all potential confounding variables were appropriately considered, and consequently, whether the findings are entirely due to PM_{10} toxicity. This is extremely important, given the manner in which the report discounts the findings of some studies suggestive of negative associations between PM_{10} exposures and specific health effects. In the majority of these cases, the report observes that either the statistical power of the data presented in the reports was not strong due to limitations in sample size, or that the study did not fully consider appropriate confounding variables. Given these observations, it is surprising that the conclusions in the report do not sufficiently take account of the uncertainties associated with the assessment of this complex mixture. This is reinforced in the following description of the uncertainties of the risk analysis (cf. Section 3.1.4):



"there are still some important uncertainties in the available effects-related data. There is concern for possible confounding from exposure to other co-occurring (and often highly correlated) pollutants, in which case the increased risk could be ascribed to the wrong agent"

This statement acknowledges that a number of important issues remain to be addressed in assessing the health risks associated with PM_{10} . Consequently, though the report may present sufficient evidence to suggest a weak association between PM_{10} exposure and a multitude of health effects, it is important to stress that the support for such associations are weak at best, and that further investigations into these associations are warranted. As such, it is our opinion that the data presented in support of the report's conclusion are limited and many not be representative of the true risk of PM_{10} . Although we concur with the report that its findings may support "a reasonable basis for preventative action", the confidence in the data presented in this assessment is weak and additional work is recommended.

Uncertainty Concerning Exposure

Evaluation of whether a substance is "toxic" under the CEPA definitions, as with any analysis of health effects or risks, is dependent on a reliable estimate of potential exposure. The report acknowledges the uncertainties associated with the current state of knowledge concerning PM_{10} exposure. These uncertainties are based on the fact that even though there is a vast inventory of monitoring data, the majority of the data represent 24-hour ambient concentrations measured at fixed sites. The report acknowledges that there is significant site-specific variability in the distribution of PM_{10} concentrations, and that there is some uncertainty associated with the use of fixed-area monitoring data as surrogates for human exposure. However, the report fails to address the significant regional variability in PM_{10} levels.

The lack of confidence in the overall exposure assessment presented within this report highlights a need for further research in this area, and brings into question the defensibility of the conclusions presented in the report.

Uncertainty Concerning Risk Characterisation

The strength with which the conclusions are presented in the report is surprising, given the uncertainties discussion, presented under Section 3.1.4 of the report. The level of uncertainty in our understanding of the potential health effects associated with PM_{10} remains high, and this report presents little information to address these uncertainties. However, in spite of these very significant uncertainties, the conclusions presented in the report are stated definitively, and the level of confidence in the conclusions is reported to be "moderate to high" based on the "sufficient weight-of-evidence...". Some of the key uncertainties noted in the report include:

- "Strength of the association is... weak, although fairly consistent..."
- "No epidemiological studies that have investigated health outcomes in relation to exposure to ultrafine particles or to personal exposure"
- "Few epidemiological data on the health effects of long-term exposure to particulate matter"



- "...available controlled studies of human exposed to particulate matter are quite limited..."
- "With respect to studies in animals, there are few dosimetric data to account for differences in responses observed in animals and humans; and the modes of action for particulate matter-related health effects have still not been elucidated..."

Although PM_{10} may be associated with specific health effects, this must be considered uncertain based on the information in the report. The report's rather definite conclusions do not appropriately reflect this level of uncertainty.

Evaluation of Assertions of the Expert Advisory Panel With Respect to PM_{10}

Respiratory and Pulmonary Health Dysfunction

The report presents some supporting data to suggest that PM_{10} may be associated with respiratory and pulmonary health dysfunction. However, the report does not characterise specific impacts on the respiratory/pulmonary systems. Specific impacts on respiratory and/or pulmonary function and the mechanism of toxicity are not addressed. Although the report presents some data concerning potential long-term effects, the data set for long-term toxicity is limited and is not included in the basis of any of the conclusions presented in the report. Therefore, although it would appear that this assertion is confirmed, at least to a degree, it is also clear that additional work is required to further characterise these potential effects.

Increased School/Work Absenteeism and Hospitalisation

This assertion is addressed under Sections 2.4.1.2.2 (hospitalisation) and 2.4.1.2.3 (school/work absenteeism) of the report. With respect to school absenteeism, the number of studies in support of this assertion is limited, and the degree to which the data presented under this section is representative of Canadian ambient PM_{10} conditions is uncertain. This is due to the observation that in the study by Ransom and Pope (1992), the data presented was for ambient PM_{10} concentrations ranging between 41 to 51 $\mu\text{g}/\text{m}^3$ (which is at the high range of mean ambient PM_{10} concentrations across Canada presented under Section 2.3.2.2.1 (11 to 42 $\mu\text{g}/\text{m}^3$).

With respect to the assertion of increased hospitalisation, there is a large data set of supporting data presented in the report. The data presented in this set and the methodology and study design employed in these studies appear to be highly variable. In addition, the confounding variables that are addressed in these studies are also highly variable, and some of the data are based on derived PM_{10} levels from non-direct measurements of PM. In fact, the data considered in the report to be the "most reliable" (Burnett *et al.*, 1995) is based on measured sulphate levels, and did not consider PM_{10} directly. Therefore, the confidence in the available data concerning the relationship between PM_{10} and increased hospitalisations remains uncertain.



Overall Evaluation of Health Risks

Based on this review, it appears as though this report can only support the need for additional work with respect to the evaluation of the health risks associated with PM_{10} . As such, the need for an assessment of the potential health risks associated with PM_{10} still remains.

Conclusion

GLOBALTOX concludes that there is significant uncertainty associated with the conclusions presented in the Environment/Health Canada PSL2 report on PM_{10} . The strength of association between a number of the health effects and PM_{10} is weak at best, and further work is required to elucidate the biological plausibility of these associations. Though PM_{10} may be associated with specific health effects, the confirmation of, and risks related to, such associations are poorly characterised. Although the conclusions presented by the study might support "a reasonable basis for preventative action", they give a misleading impression as to the degree of confidence afforded by the available database.

Recommendation

Further work should be undertaken to locate peer-reviewed scientific studies that respond to the limitations identified above. Where necessary, new research (or further synthesis of existing information) should be undertaken to expand the knowledge base to the point where a more definitive and defensible conclusion can be advanced with respect to whether PM_{10} are "toxic" as defined under CEPA.

Closure

GLOBALTOX appreciates the opportunity to assist the CTA in its review of Environment and Health Canada's evaluation of PM_{10} under CEPA. Please do not hesitate to contact me at (519) 766-1000 ext. 223 should you have any questions concerning this letter-report.

Yours sincerely,

GLOBALTOX INTERNATIONAL CONSULTANTS INC.

Ronald W. Brecher, PhD, DABT, C.Chem.

Principal