

**RESPONSE TO THE
PROPOSED AMENDMENT TO REGULATION 347**

THE CASE AGAINST INCINERATION

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1. INTRODUCTION

Solid waste management is one of the most important and controversial issues facing the province of Ontario. Inherent in any discussion of solid waste management, are significant environmental, economic, social and public health considerations.

The purpose of this submission is to respond to a proposal by the Ministry of Environment and Energy pertaining to a number of issues, including: a proposal to amend Regulation 347 which would have the effect of repealing a ban on municipal incinerators as defined in Regulation 555/92; a proposed exemption order under the *Environmental Assessment Act*; and a proposal for air pollution control guidelines for new municipal waste incinerators.¹

The conclusion of this submission is that the Province of Ontario should **not** repeal the ban on new municipal waste incinerators. Municipal waste incineration is not an effective waste management option from any perspective, be it resource management, energy generation, health or economic. Further, the submission contains a number of general and specific recommendations that should be considered in the context of this proposal.

2. THE NEED FOR A RATIONALE FOR THE REPEAL OF THE BAN

It is important to provide a context for the existing ban on solid waste incinerators. This section outlines the context of the 1992 ban and the rationale when the regulation was established.

2.1 Description of the Proposal - The 1992 Ban

On September 11, 1992, Regulation 309 of the Ontario Environmental Protection Act was amended in order to give legal force to the Ministry of the Environment's stated policy on municipal waste incineration.² As a result of the changes to Regulation 309, no new municipal waste incinerators could be built or operated in Ontario. The only exception to this ban on incineration was with respect to certain waste-specific incinerators³, which would still be allowed.⁴

The Ministry gave three broad reasons for the ban on incineration; the MoE was concerned

with the effect incineration has on: human and environmental health, waste management, and the economy.⁵ Within these broad categories, the specific concerns were:

- the air emissions from incinerators threaten both human and environmental health: incinerators generate a wide variety of heavy metals and organic contaminants that endanger human health, as well as gases that cause acid rain, smog and global warming;
- solid waste incinerators create large quantities of slag, ash and other solid waste residues: much of this waste material is contaminated and must be sent to hazardous waste treatment facilities and landfills;
- the incineration of recyclable material and other valuable components in the solid waste stream directly competes for these materials with programs supporting waste reduction, reuse and recycling;
- incineration is less cost-effective than recycling and other 3Rs waste minimization alternatives: it is more expensive than other waste disposal options, including landfilling; and
- incineration is inconsistent with the MoE's approach to protecting Ontario's air, water and land through pollution prevention.⁶

2.2 The Lack of a Rationale for the Repeal of the Ban

Although a government may change its mind and either re-write or repeal a law, governments should provide a rationale for the reversal of earlier decisions. The basis for this principle is to give confidence to the public that there are technical and public policy criteria that would justify a wholesale reversal of a law. The very essence of a regulatory framework is to provide a set of clear, consistent and predictable rules for all members of society. Hence, the wholesale reversal of those rules should be undertaken only in response to a clear set of reasons, explaining why the regulations are being amended, with technical and supporting documentation to back those reasons.

The present proposal to repeal the incineration ban does not explain the rationale for the change or the repeal. What has changed from 1992 to the present that would justify the change in the regulation? Has there been new break-throughs in technologies? Have there been new scientific studies? Has the economics of incineration changed since the early 1990s?

It is our submission that there exists no persuasive rationale for this change in law.

We further submit that the manner in which the public consultation with regard to the repeal of the ban on incineration has been carried out is inappropriate. The existing consultation was inadequate for several reasons: there was inadequate time for comment; it was held only over the summer months, which may have made it difficult for the public to provide comment; the Ministry failed to give its rationale for their decision to lift the ban on incineration, and there was no opportunity for discussion in a public forum.

3. THE EFFECTS OF INCINERATION ON THE 3RS

Over the past decade, enormous effort has been expended by all stakeholders in society to develop a waste management regime for the province. The foundation of that regime is a series of regulatory initiatives aimed at the 3Rs - the reduction, reuse and recycling of waste.

As this regime has evolved, it is apparent Ontario's solid waste framework is working. Significant quantities of waste are being diverted from disposal options while various 3Rs industries are flourishing. The most compelling argument against the repeal of the incineration ban is the impact it will have on the 3Rs industrial sector in the province of Ontario.

Solid waste is not waste at all - it is an untapped resource. This resource, as will be discussed later, has a significant value, if it is recovered and dealt with appropriately. The most fundamental public policy question for a solid waste regime is simply this: should this material be treated as waste or as a resource? A regime predicated on incineration invariably views this material as a waste. In reviewing the 3Rs industrial sector in Ontario, it is apparent the province has, over the past decade, taken the opposite view to this question, by defining waste as a resource.

When solid waste is regarded as a resource, there is an inherent incompatibility between solid waste incineration and the development and maintenance of an aggressive 3Rs regime. The success of a municipal waste diversion strategy is measured in terms of the amount of municipal waste that no longer needs to be disposed of. The greater the reduction in the waste stream, the more successful the waste diversion strategy. Conversely, incineration facilities require a minimum amount of waste to be supplied on a regular basis. The more successful the waste diversion strategy is at diverting waste, the more difficult it will be for incineration facilities to operate.

A number of arguments are outlined below.

Argument 1: Incineration competes with the secondary fibre market.

One of the most obvious drawbacks to incineration is that it creates competition for the secondary fibres that are the basis for the recycling sector.⁷

The fact remains, the best waste for incineration and the best waste for recycling are the same. For energy-from-waste systems to be efficient, highly combustible materials, such as paper, plastic and organic waste, are needed for the incineration of the other, less combustible, materials. If these materials are removed from the waste stream, the incinerator will have to be fed energy to maintain combustion. It is these highly combustible materials that are also in greatest demand in the recycling industry.⁸ The material that burns the best is the material that recycles the best.

For any comprehensive 3Rs regime, there is the need to develop markets for secondary fibres. These markets usually take years to develop and require industrial processes to be retooled to use secondary fibre. Recycling markets also require the recycler to find capital and investment dollars to develop the secondary fibre infrastructure, to secure stable supplies of secondary fibre, to acquire a skilled workforce, and to instill a sense of confidence in this new industry.

This market development process and capital investment has been evolving in Ontario for some time. The proposal to allow incinerators provides a direct challenge to the evolving secondary markets. This challenge is derived from the following factors:

- (i) There will be competition for secondary fibre. The highly combustible materials

needed for the efficient incineration of waste are precisely the materials most in demand for recycled products;

(ii) Investors will be reluctant to invest in a secondary fibre market where there will be increased competition for secondary fibre itself; and

(iii) There will be less of an incentive to find new secondary fibre markets where there is an incinerator disposal option readily available. Market innovation will be lost.

The paper producing industries have expressed concern over the lifting of the ban on incineration for exactly this reason. Paper industries have, over the past five years, spent \$180 million in retooling their plants to make products from recycled materials.⁹ The Globe and Mail reported, on July 10, 1995, there is currently not enough waste paper and cardboard fibre in Canada to meet the paper industries needs.¹⁰ Canada is, in fact, the world's largest importer of waste paper.¹¹ This has led many in the paper industry to be sceptical about claims that incineration will have no negative impact on recycling. Norm Pridman, of Quno Paper has been quoted as being highly sceptical of claims by incineration proponents that waste paper would not be used in energy-from-waste plants.¹² This view was echoed by the Paper and Paperboard Packaging Environmental Council, which stated,

...when the value of paper far exceeds its calorific value; it makes no sense to burn ... we haven't supported the 3Rs infrastructure through investments in million dollar paper mill equipment to see it all go up in smoke¹³

Argument 2: Incinerators Discourage Aggressive Waste Reduction Goals.

A common argument in favour of incineration is that if the incinerator is the appropriate size, waste reduction and incineration complement each other. However, in practice, the existence of an incinerator discourages the establishment of more aggressive 3R targets.

Ontario is currently committed to a waste diversion objective of 50% by the year 2000. This is only four years away. The Recycling Council of Ontario argues it is impossible to predict what percentages and what components will make up the waste stream after that time.¹⁴ What is clear, however, is that if there is a large disposal option available, it is highly

doubtful new targets would be set, or existing targets would be met.

In fact, there are economic factors that mitigate against setting more aggressive targets. Often, incinerators include a "put or pay" provision in the contract with the municipality. The community commits to provide the plant with that level of waste, and if the community is unable to produce that much waste, it is common for the municipality to be forced to pay a penalty.

In Brampton, for example, the community has committed to provide the EFW plant with 400 tons of garbage per day. The EFW plant charges the municipality a tipping fee of \$67 per ton, for a total charge of \$26,800 per day. If the municipality is unable to deliver the 400 tons per day, as a result of successful waste diversion efforts or other factors, it is still responsible for paying the plant the \$26,800 daily charge.¹⁵ Communities will often be reluctant to set higher diversion goals if in fact that may result in high penalty payments. Some of these penalties may be sizable. For example, Norowich, Connecticut currently pays a penalty of over \$300,000 each year for failing to deliver its contracted waste volume to the Connecticut Resource Recovery Authority EFW Plant.¹⁶

Dr. Paul Connett summarizes this argument by stating that: "Once an incinerator is incorporated in a waste plan, it drives all other decisions."¹⁷ Once the incinerator option is in place, the incentive to divert waste is seriously undermined and jeopardized.

Argument 3: Incineration should never be considered a complement to waste diversion strategies.

Proponents of incineration often argue that, even with aggressive recycling and composting, only 30% of waste could be removed from the waste stream; therefore, there is still a residual that needs to be dealt with in some way.¹⁸ The problem with this argument, however, is that it presupposes modest targets are the only targets that are achievable.

The claim that only 30% of waste can be diverted is untrue. As mentioned, Ontario has committed to reduce waste 50% by the year 2000. Other municipalities have shown that, with commitment, this is far from an unrealistic goal. In Lunenburg County, Nova Scotia, the implementation of a composting and recycling strategy has resulted in 75% waste diversion.

Closer to home, St. Thomas, Ontario recently calculated its 1994 residential waste diversion at 65%. Similarly, Sidney Township, using a user pay system, has diverted 63% of waste from its landfills.¹⁹ There is nothing exceptional about these examples; they merely show what a true commitment to waste diversion can result in.

Furthermore, the fact is that after a serious recycling and composting program, the residual is not easily incinerated. As is discussed later in this submission, the best material for incineration is also the best material for recycling. Therefore, if recycling and composting are seriously pursued, the waste that will be left over will be poorly suited or even unsuitable for incineration.

Argument 4: Incineration is a Disincentive to Addressing Solutions Upstream.

Incineration also acts as a disincentive to addressing upstream solutions. For example, with incineration in place, there is little incentive for the government and industries to develop upstream measures such as product stewardship, packaging laws and requirements pertaining to the recyclability of products, among others. More importantly, the issue of consumption itself is unlikely to be addressed if there is an "easy" disposal option, even one with serious drawbacks.

4. THE ENERGY FALLACY OF INCINERATION

Proponents of incineration cite as one of incineration's primary benefits its ability to generate energy from waste. In the average energy-from-waste plant, between 35% and 50% of revenues come from the sales of energy produced.²⁰ However, this figure is incredibly deceiving since no real benefits come to society from producing energy in this manner. A number of arguments are made to demonstrate that the production of energy is not an appropriate rationale for the repeal of the incineration ban.

First, compared with other sources of energy, incineration is perhaps one of the most inefficient means of producing energy. In studies carried out in Germany, it was found the total energy that could be produced by burning waste is only 13% of the energy released by the same amount of coal.²¹

Similarly, Work on Waste concluded that "incineration turns out to be an inherently inefficient method of generating electricity."²² The efficiency with which a mass-burn incinerator turns fuel to electricity is only 15%, compared with coal or natural gas steam-driven electric plants, which achieve efficiency of 33%. The reasons for this inefficiency are twofold. First, solid waste is often wet, making it difficult to burn. Secondly, "the heterogenous nature of garbage makes it impossible to achieve as complete combustion as in fossil fuel plants."²³

Aside from being extremely inefficient relative to other energy sources, energy production from incineration actually represents a net energy loss to society. Whenever a product is burned, that material or product must be replaced. In replacing this material, society has to bear the full energy cost of extracting all of the required virgin materials.²⁴ Dr. Jeffery Morris calculated that three to five times more energy can be saved by reusing and recycling materials rather than burning them.²⁵

In other studies, it has been found that recycling a product consumes an average of 50% less energy than the cost of replacing it with a newly manufactured one. With some products, such as aluminium products, the energy savings from recycling can be as high as 96%.²⁶

The Ontario Select Committee on Energy estimates that conservation (in particular, recycling) could return 4,000 megawatts of energy at a cost of 2.4 to 4.8 cents per kilowatthour. Conversely, incinerators can produce a maximum of 300 megawatts of electricity, and the cost increases to 3.3 to 6.9 cents per kilowatthour.

This is particularly relevant when one considers two additional factors:

- the materials most desirable for incineration are also the materials most sought after by recyclers.²⁷ Therefore, if Energy-From-Waste (EFW) plant operators are true to their promise not to compete with recyclers for waste, the EFW plant will lose its most combustible materials, making energy production even less efficient.
- 80% of all waste is recyclable.²⁸

By waste stream component, the comparison between energy from recycling and from incineration is as follows²⁹:

WASTE COMPONENT	ENERGY GENERATED BY INCINERATION (MJ/Mg)	ENERGY SAVED BY RECYCLING (MJ/Mg)
PAPER	2,500	8,500
METAL	0	6,000
RUBBER	1,000	5,000
TEXTILES	200	400
GLASS	0	50
ORGANIC	250	0
ONTARIO MSW	6,000	23,000

5. ENVIRONMENTAL IMPACTS OF INCINERATION

5.1 Air Emissions

Even the most modern incinerators emit pollutants into the environment. While there will always be debate as to the levels of discharge, the underlying fact remains, the pollutants that are released continue to be a threat to human health and the environment.

Dioxin Emissions

The U.S. Environmental Protection Agency Dioxin Re-Assessment Study released in September of 1994 confirmed that incinerators are, in fact, one of the largest contributors of dioxin to the environment.³⁰ A recent study by the Centre for the Study of Biological

Systems at Queen's College, State University of New York, made estimates to the effect that solid waste incinerators are one of the largest sources of dioxin to the Great Lakes.³¹

Moreover, a number of studies have continued to warn of the problems associated with persistent toxic substances and dioxin-like substances. Dioxin and dioxin-like substances are particularly harmful, as they are able to cross the placenta and affect the fetus in the mother's womb. As a result of this, many of the human fetus' critical developmental events can be disturbed, potentially resulting in embryo/fetal mortality, the disruption of organ system structure and the irreversible impairment of organ functioning.³²

As the infant grows, the developing immune system is one of the most sensitive to disruption by low-level exposure of dioxin-like chemicals. It is well known that suppressed immunological functions can result in increased frequency and severity of infectious diseases as well as some types of cancer.³³

It has also been shown that dioxin-like substances can upset the proper functioning of the male reproductive system. In a study by the World Health Organization (1989) a loss of libido was reported in workers exposed to dioxins³⁴. Reduced levels of testosterone and testicular abnormalities have also been documented in workers exposed to dioxin.³⁵

Webster argues that these effects on development, reproduction, and the immune system can occur at "extremely low levels" of dioxin exposure. He also cites a recent study that found the Canadian dioxin guideline (10 pg/kg/d) is not stringent enough to protect the Canadian population. Webster argues that this is particularly true in light of new studies that show dioxin causes effects at lower doses than previously thought.³⁶

Mercury Emissions

Incineration is also the largest source of mercury entering the urban environment. Testing at the Ashbridges Bay Main Sewage Treatment Incinerator have shown average mercury emissions of up to 290 kilograms per year.³⁷ Mercury has cumulative effects, depositing in the brain, liver and kidney. Symptoms of mercury exposure include tremors, irritability, headaches, kidney failure, speech disorders and neuromuscular disorders. Personality changes, including depression and memory loss, may also result.³⁸

Lead Emissions

Lead is also found in incineration emissions. Proponents of incineration cite the fact that new technologies allow most lead to be removed and left behind in the bottom ash. The fact that most lead is removed is unimpressive when one considers the fact that, for fetuses and children, **there is no safe level of lead.**³⁹ Despite this, testing at the Ashbridges Bay incinerators shows, since 1984, lead emissions have fluctuated between 16 and 320 kilograms per year.⁴⁰

Lead is readily absorbed through the respiratory and G.I. tracts, where it travels to the blood stream. Eventually, most of the lead is stored in the bones, where it can stay for 20 years, affecting the central nervous system, the blood producing system and the kidneys. The result can be moderate to severe anemia or brain damage. Chronic lead poisoning, resulting from levels once thought to be safe, has been found to slow performance on psychological testing, impair intelligence and cause personality changes.⁴¹

Cadmium Emissions

As with lead, there is no safe level of cadmium. Relatively low, but continuous exposure results in damage to the filtering system of the kidney. Higher concentrations damage the lung tissue, causing emphysema. Other effects of cadmium exposure include: watery nasal discharge, yellow rings around the teeth, loss of smell, and anemia.⁴² In the test at Ashbridges Bay referred to above, average cadmium emissions of up to 180 kilograms per year were found.⁴³

Particulate Emissions

Incineration also causes particulate to be produced and emitted into the air. These particulate are known to significantly increase the incidence of respiratory allergies. As the levels of suspended particles increases, there is a corresponding deterioration of lung function. This has been shown to be a major source of chronic respiratory problems in children. In adults, it causes respiratory conditions of sufficient severity to result in significant work loss.⁴⁴

It should be noted that the province has made a number of commitments to phase-out persistent toxic substances. These include:

* **Toxic Substances Control Agreement:** The province has, in principle, agreed to the commitments in the Great Lakes Water Quality Agreement by agreeing to the Toxic Substances Control Agreement concluded between the U.S. states and Ontario (1986). The Great Lakes Water Quality Agreement, in turn, commits the signatories to the goal of virtual elimination of persistent toxic substances;

* **Canada-Ontario Agreement:** The Province of Ontario has agreed to the virtual elimination of a number of substances that may be emitted from incinerators, including dioxins, furans, lead, mercury and cadmium. Such commitments are parallel to the draft U.S.-Canada Binational Strategy for the Virtual Elimination of Persistent Toxic Substances from the Great Lakes Ecosystem where Ontario played a role in its negotiation;

* **Environmental Bill Of Rights:** One of the purposes of this Act, as stated in section 2(2)(2) is the prevention, reduction and elimination of the use, generation and release of pollutants that are an unreasonable threat to the integrity of the environment;

* **Statement of Environmental Values:** In its Statement of Environmental Values, created in compliance with section 8 of the *Environmental Bill of Rights*, the Ministry of Environment and Energy (MoEE) stated that one of its guiding principals is to "place priority first on preventing and second on minimizing the creation of pollutants that can damage the environment";

* **Other Commitments:** It should be mentioned that the MoEE has also made commitments to phase-out various persistent toxic substances, including the development of a list of candidate substances to ban and phase-out.

The repeal of the incinerator ban and the proposed air pollution control guideline for new municipal waste incinerators are inconsistent with the province's present commitments.

5.2 Ash Disposal

Incinerators produce significant quantities of bottom and fly ash. In terms of fly ash, many jurisdictions, such as Ontario, Quebec and British Columbia, regard these residues as hazardous waste. As such, the Province, by repealing the incinerator ban, is amplifying the hazardous waste problem in the province.

Bottom ash is not considered to be hazardous waste. Clapp et al (1988) found, however, this should not necessarily be the case. The U.S. Environmental Protection Agency has recently raised concerns regarding the effect of ash (both fly and bottom) leachate on clay soils and liners in landfills. The high alkalinity and salt content cause rapid deterioration of clay liners. In unlined landfills, chloride complexes of lead and cadmium, which is often found in ash, has been found to move rapidly through the soil and to cause environmental damage.⁴⁵ The United States Supreme Court recently found, in City of Chicago v. Environmental Defense Fund⁴⁶, that if the ash qualifies as hazardous, "there can be no question that the creation of ash by incinerating municipal waste constitutes generation of hazardous waste". This is very important in that the court did not distinguish between fly and bottom ash. Rather, the U.S. Supreme Court has stated that if any of the ash from incineration is hazardous, all of the ash must be treated as hazardous waste.

Bottom ash also creates a disposal problem due to its volume, which could be as much as 30% of the input into the incinerator. As such this substantiates the view that incinerators are not only costly but that they also do not "solve" the problem of solid waste.

6. THE ECONOMICS OF INCINERATION

Despite all of the concerns raised in this submission, the fact remains that the incineration question may become a "bottom line issue". Ontario is in a period of fiscal restraint, and some believe the low cost option is the best option, no matter what. It is in light of this realization that the lifting of the ban on incineration becomes all the more perplexing. Incineration is extremely expensive. Due to the enormous capital costs involved in constructing an incinerator, incineration of waste is one of the most expensive disposal options.

Even the most ardent supporters of incineration admit that for the first "twenty or so years of operation, modern landfill and energy-from-waste facilities have similar costs per ton of waste handled."⁴⁷ Actual evidence shows that even this lacklustre endorsement of incineration is vastly overstated.

For both individuals and operators, incineration is a far more expensive alternative to landfilling and recycling. For the individual waste producer, The Wall Street Journal reported that in the United States, the average fee for disposal at incinerators is \$56 per ton. This is double the average disposal fee at landfills, which is only \$28 per ton.⁴⁸

When all costs are considered, the result is the same. In examining the feasibility of incineration in the city of New York, the Office of the Comptroller concluded that, for the city, incineration would cost taxpayers between \$111 million and \$193 million more per year than a program using landfilling and recycling. When all of the costs and revenues of an energy-from-waste facility were considered, it was found that incinerators could dispose of waste at a cost of \$246 per ton, while a program which combines 50% recycling and landfilling would cost only \$213 per ton of waste.⁴⁹

In Canada, the results are similar. In analyzing the feasibility of an incinerator proposed for Kingston, the tipping fee required at the proposed incinerator would be three times higher than landfill tipping fees. Averaged over 25 years, a proposed landfill would be able to manage waste at a cost of \$27 per tonne, while the Montenay-Birwelco incinerator had a proposed tipping fee of \$70-\$85 per tonne of waste incinerated.⁵⁰

7. INCOMPATIBILITY OF GUIDELINE A-7 WITH WASTE MANAGEMENT OBJECTIVES

It is our absolute position, throughout this submission, the ban on incineration should be maintained for Ontario. As such, there has been little need to comment on the provisions suggested by the government, in Guideline A-7, to regulate incineration.

It would, however, be imprudent, not to include in this submission a brief statement of our concern regarding Guideline A-7. For the following reasons, we find these guidelines to be wholly inappropriate for the regulation of incineration in Ontario:

- They allow incineration of both recyclable and compostable materials. This creates competition between incineration and waste diversion strategies for these materials, and is in direct conflict with the Province of Ontario's clear policy on waste diversion.
- There is no provision in the Guidelines for public oversight and monitoring of incinerators.
- There are no provisions in the Guidelines that outline sanctions that will be undertaken if there is a breach of the standards established in the Guidelines.
- Allowable emission levels are not low enough to protect human and environmental health. There is growing evidence of the negative health impacts resulting from dioxin emissions, yet the Guidelines allow dioxin emissions of 0.14 ng I-TEQ/RM³. Similar is true of many other emissions, including mercury, lead, cadmium and particulate. This is especially unacceptable for lead and cadmium, as there is no safe level of exposure to these metals.

8. FINDINGS AND RECOMMENDATIONS

FINDINGS

In the introduction to this submission, it was stated incineration is not an effective waste management option from either a resource management, energy generation, health or economic perspective. The evidence provided in the body of this submission shows this to be unequivocally true.

From a waste management perspective, incineration is inherently incompatible with Ontario's stated policy on waste management and recycling. Through aggressive recycling and composting efforts, Ontario has begun to develop viable 3Rs industries, creating considerable economic benefits and employment prospects. This, combined with waste reduction efforts, is enabling Ontario to make headway in its quest for 50% waste divergence from landfills by the year 2000. All of this will be completely undermined by a repeal of the ban on incineration. The view that incineration and waste diversion can co-exist and actually complement one another is naive and completely unrealistic; they operate at cross purposes. Incineration

needs a fixed amount of waste to survive, while waste diversion strategies aim to minimize waste with an ultimate goal of eliminating it. *Where incineration is used, all of the 3R strategies become impediments to its viability.*

As a means of generating energy, incineration is both extremely inefficient and a misuse of resources. As a means of producing energy, incineration is one of the most inefficient methods of doing so. More importantly, however, is the fact that when waste is burned to produce energy there is, in reality, a significant net loss in energy. If waste is recycled, rather than incinerated, three to five times less energy is used, even when the energy produced by incineration is factored in. For example, recycling 1,000 kilograms of paper saves 8,500 MJ of energy, while burning that amount of paper produces only 2,500 MJ of energy.

From a health perspective, proponents of incineration argue that incineration is benign. While advances have been made which have reduced the emissions from incinerators, the emissions from incinerators are not benign. *Even an incinerator using state-of-the-art technology has emissions which may pose a serious risk to human health.*

There is a growing body of evidence that suggests the release of dioxin and dioxin-like substances from incinerators are linked to serious developmental defects in fetuses and infants, in immune system deficiencies in both adults and children, and in reproduction problems in adults. Incineration is also the leading urban source of mercury into the environment. Additionally, significant quantities of lead and cadmium are emitted; these are metals for which there are no safe levels of exposure. Finally, particulate emissions from incinerators continue to pose a serious threat to our respiratory systems.

From an economic perspective, incineration remains far too expensive relative to other waste management options to be considered as a feasible alternative. Even when the revenues from the sale of energy are factored in, incineration remains far more expensive than a waste management program that combines landfilling and recycling.

RECOMMENDATIONS

Recommendation 1: On the basis of our findings, it is respectfully submitted that regulation 347 should **not** be amended to allow new municipal waste incinerators.

Recommendation 2: If the government does intend to pursue incineration as a disposal option, it is respectfully submitted that a more thorough public consultation on the proposed amendment and on Guideline A-7 be conducted before making a decision.

Recommendation 3: It is respectfully submitted that the government provide the full technical and policy basis and rationale for this regulation, and specifically, the data relied upon to reverse the province's 1992 decision. This rationale and policy basis should be put out for public comment.

Recommendation 4: It is further recommended that the technical and policy basis be subject to an environmental assessment hearing that would allow the testing of the evidence in an impartial and expert manner.

Recommendation 5: In the further alternative, if the incineration ban is repealed, it is respectfully submitted that a full hearing under the *Environmental Assessment Act* should be undertaken for individual incinerators. For these hearings, intervenor funding should be provided.

Recommendation 6: Guideline A-7 be amended to:

- require that recyclables and compostables not be incinerated;
- create a funded citizen monitoring committee;
- require that an incinerator be closed down immediately if it fails to meet the conditions in the regulation or its certificate of approval until and unless it is shown to the satisfaction of the Ministry and the Citizens' Monitoring Committee that these violations will not occur again; and
- reduce acceptable emission levels for cadmium, lead, mercury and dioxins and furans to zero; this would involve the elimination of any feedstock that would lead to the generation of any persistent contaminant, and in particular dioxins and dioxin-like compounds.

ENDNOTES

1. The province proposed to enact Guideline A-7: Combustion and Air Pollution Control Requirements for New Municipal Waste Incinerators. These guidelines provide certain design and operation criteria for proposed incinerators, and will apply to all new municipal waste incinerators. The guidelines will be enforced by imposing conditions on the Certificates of Approval in accordance with the requirements of the *Environmental Protection Act*, Part V, Section 27, and Part II, Section 9 (MoEE, 1995a: 2-3).

The purpose of the guidelines is stated as: to minimize contaminant air emissions from new incineration systems by requiring proper control of the combustion process and establishing minimum design and operating parameters for the evaluation of combustion (MoEE, 1995a: 3).

2. MoE (1992b), at 1.

3. Municipal waste incinerators which would burn only woodwaste, sewage sludge (under certain conditions), paper mill sludge, pulp mill sludge, paper deinking sludge, etc., could still be opened and operated under the amended regulation (MoE, 1992b: 2-3).

4. MoE (1992b), at 2.

5. MoE (1992a), at 1.

6. MoE (1992a), at 1-2.

7. Portions of this section is from: Paul Muldoon, Speaking Notes on the "Impact of Incineration on Waste Reduction Initiatives" for the Recycling Council of Ontario Conference, May 8, 1995.

8. Tomalty and Patterson (1989), at 7.

9. Recycling Council of Ontario (1995), at 26.

10. Globe and Mail (1995), at B3.

11. Paper and Paperboard Packaging Environmental Council (1995).

12. *Supra* 9, at 2.

13. Paper and Paperboard Packaging Environmental Council (1995).

14. Recycling Council of Ontario (1995), at 26.

15. Recycling Council of Ontario (1995), at 5.

16. Recycling Council of Ontario (1995), at 25.

17. Connett, Paul and Connett, Ellen (1994), at 19.
18. Recycling Council of Ontario (1995), at 25.
19. Recycling Council of Ontario (1995), at 26-27.
20. Recycling Council of Ontario (1995), at 16.
21. *Between the Lines* (1989), at 10.
22. *Work on Waste* (1993), at 11.
23. *Work on Waste* (1993), at 11.
24. Connett and Connett (1993), at 9-10.
25. Connett and Connett (1993), at 10.
26. *Between the Lines* (1989), at 10.
27. Tomalty and Patterson (1989), at 7.
28. *Between the Lines* (1989), at 10.
29. *Work on Waste* (1993), at 12.
30. U.S. Environmental Protection Agency (1995), at 27.
31. Cohen, Commoner, et al (1995), Table II-A.
32. Rachel's Hazardous Waste News #391 (1994), at 1.
33. *Ibid.*, at 1.
34. Webster (1994), at 5.
35. Webster (1994), at 5.
36. Webster, "Dioxin and Human Health: A Public Health Assessment of Dioxin Exposure in Canada" (1994). Tom Webster is the Boston University School of Public Health.
37. Dioxins In Your Backyard: The Ashbridges Bay Sewage Incinerators and Dioxin, Appendix 3.
38. Physicians of Orillia (1990), at 14.

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