

Industrial Spills in Ontario

Ministry of the Environment

May 2005

PIBS 5085e

Protecting our environment.



Ontario

Industrial Spills in Ontario

Introduction

Spills – be they to air, land or water – have the serious potential to harm human health and impact the environment. As a result, the Ministry of the Environment plays an integral role in preventing the occurrence of spills, and in the instances that they do occur, minimizing the potential impacts to human health and/or the environment. During a spill event, the Ministry's primary role is to ensure that the party responsible for an unlawful discharge contains the spilled pollutants and cleans up the site to the satisfaction of the Ministry. Provincial laws place the primary responsibility for containment and cleanup of a spill on those who own or had control of a pollutant immediately before the spill. Furthermore, in the instance where a hazard to human health or the environment may be posed by a spill, the responsible party must report the incident to the Ministry and local municipality.

Province-wide, between 2003 and 2004, Ontario has seen an approximate 5% increase in the total number of spills reported to the Spills Action Centre.¹ More significantly, reported spills from industrial sources have increased by almost 24% over the same time period. Mirroring that trend, spills reported from MISA (Municipal Industrial Strategy for Abatement) facilities - 139 facilities that discharge effluent directly to Ontario waters - have increased by almost 13%. Similarly, a cluster of significant spills in 2003 and 2004 to the St. Clair River have focussed attention on the potential impacts of spills and the need to prevent their occurrence.

Given that as part of its mandate the Ministry seeks to ensure Ontario has clean and safe air, land and water, the Ministry is committed to improving the environment by promoting and ensuring compliance with its legislation, including taking tough action where necessary.

Recent Sarnia Spills

The Sarnia area has the highest concentration of petrochemical facilities in Canada, with 450 facilities mostly located along a 30 kilometre stretch of the St. Clair River. In 2003 and 2004, there were a number of significant spills to the St. Clair River that resulted in impacts to the surrounding community and the environment. The most significant of these events was the spill on February 1, 2004 from the Imperial Oil Limited refinery (a MISA facility) that was originally estimated as a release of 157,500 litres of industrial solvents (methyl ethyl ketone and methyl isobutyl ketone).² The resulting plume traveled slowly down the St. Clair River into Lake St. Clair and the Detroit River – posing a potential threat to downstream water users as far south as Windsor and Amherstburg.

As an immediate response to the release, nearby downstream water users in Ontario (2 water treatment plants – Wallaceburg and Walpole Island First Nation, and a number of private households) were advised, as a precaution, by the Ministry and the Medical Officer of Health not to draw drinking water from the river (2 other spills in the preceding 6 months had also caused intakes from water treatment plants to be closed). As part of

¹ Spill data is collected from incidents reported and classified as "spills" in the Ministry of the Environment's Integrated Divisional System (IDS).

² As this matter is before the courts, and this volume may be a fact in issue, no further comment is available at this time.

trans-border notification agreements with the US, Michigan authorities were advised of the incident – which subsequently also resulted in the closure of several Michigan water treatment plants.

Ontario residents in the surrounding communities were potentially affected by the water treatment plant closures, which were not reopened until 3 days after the spill (Walpole Island remained closed 1 additional day). During this period, people in the affected areas were required to use bottled water as an alternative.

On February 6, 2004 the Minister of the Environment announced the deployment of the Environmental SWAT team, which was mandated to undertake an in-depth inspection sweep of the industries in the area in order to ensure that all provincial environmental legislative and regulatory requirements were being met. The primary focus was to inspect areas with the potential for future spills that could pose risks to human health and/or the environment.

Through these inspections, it was determined that 25% of facilities lacked a spill prevention plan or a spill contingency plan or in some cases both plans. Spill prevention and contingency plans are especially critical measures for the prevention and mitigation of spills from industrial facilities; particularly since spills can have significant health, environmental and social impacts on a community.

Furthermore, on February 26, 2004, the Minister of the Environment announced the creation of the Industrial Pollution Action Team (IPAT) to study and provide recommendations on how to prevent spills and dangerous air emissions from industrial sources. On July 30, 2004, IPAT released a discussion document with a total of 15 findings and 35 recommendations in regards to industrial pollution prevention. These findings and recommendations are currently being reviewed by the Ministry.

In short, Ontarians should be able to have confidence that industry is taking all necessary steps to prevent spills due to the potential risk to human health and the environment that they pose.

2003/04 Spills Statistics³

In any given year, the Spills Action Centre (SAC) and the Ministry's District Offices may receive between 35,000 and 45,000 incident reports from the public. Of these, approximately 3700 incidents in 2003 and 3900 incidents in 2004 were classified by SAC as "spills". These spills are from a variety of sources (including, but not limited to, industrial facilities, transportation accidents, private households, municipalities, agricultural operations and public utilities) and vary in size. In general, spills and other unlawful discharges which can have health or environmental impacts are to be reported to the Ministry "forthwith". Once a report is received, the Ministry assesses each incident based on its severity (i.e., quantity discharged, proximity to sensitive areas, extent of impact, etc.) in order to determine whether a field response is required and what further action may be warranted (i.e., water treatment plant closures, public notifications, etc.). When addressing an incident, the Ministry's first priority is to protect human health and the environment.

³ Spill data is collected from incidents reported and classified as "spills" in the Ministry of the Environment's Integrated Divisional System (IDS).

As stated previously, there has been an overall trend upwards in the number of reported spills province-wide. Of the spills reported in 2003 and 2004, 858 and 1062 were identified as occurring at industrial facilities, respectively (see Map 1 – Appendix A for a map of industrial spills in Ontario). This upward trend has been mirrored by MISA facilities, which comprise some of the largest industrial direct dischargers in the province. Although there are only 139 MISA facilities in Ontario, they have accounted for between 35% and 39% of reported spills between 2003 and 2004 from all industrial sources (see Map 2 – Appendix A for a map of spills from MISA facilities). When broken down by media, MISA facilities account for a significant number of reported spills to air, land, and water – in fact, MISA facilities accounted for 64% of all reported industrial spills to water in 2003 (see Figure 1 – Appendix A).

When spills are considered in terms of reported volumes released⁴, MISA facilities accounted for 84% of reported liquid spills in 2003 from all industrial sources. Even when removing a 5,000,000 L spill during the August 14th power outage, MISA facilities still account for 71.3% of all reported liquid spills in 2003 from industrial sources.

More significantly, MISA facilities accounted for 97.9% of all reported liquid spills in 2004. Even when removing an anomalously large spill of 18,000,000 L of wastewater at a MISA facility, from the 2004 analysis, MISA facilities still accounted for 86.3% of all reported liquid spills in 2004 from industrial sources.

Spills from MISA facilities have also been larger than the average industrial spill in both 2003 and 2004. In fact, paralleling the overall increase in number of spills from 2003 to 2004, the average size of spills has increased significantly from one year to the next (see Figures 2 and 3 – Appendix A).

When comparing individual sectors within MISA, four sectors (Iron & Steel, Metal Mining, Pulp & Paper and Organic Chemical) account for approximately 80% of all MISA spills for both 2003 and 2004 (see Figure 4 – Appendix A).

Spills have resulted in direct impacts to local communities and the environment by impacting the air, land or waters of Ontario. For example, the available data indicates a 6 fold increase in the number of water treatment plant intake closures across the province due to spills from MISA facilities to water from 2003 to 2004 (see Figures 5 and 6 – Appendix A). These have resulted in significant impacts to the surrounding communities by limiting the amount of water for emergency use (i.e., fire fighting), potentially limiting industrial/commercial use of water resources, and requiring families, schools and other affected populations to use alternate sources of water (i.e., bottled water) for drinking and everyday domestic needs.

Some specific examples of spills from MISA facilities that had impacts to surrounding communities and the environment include:

- On January 7, 2004 Domtar Inc., which has a pulp and paper facility located in Espanola, reported a release of caustic black liquor mist to the air. The mist condensed in the atmosphere and fell back to the ground. It was reported that nearby residents were affected by the incident, with fallout being deposited on vehicles in the vicinity of the plant. As part of the spill response, residents who may

⁴ Some spills reported to the Ministry may not specify a volume

have come in contact with the mist were advised to shower and discard any clothing they were wearing.

- On February 1, 2004 the Imperial Oil refinery located in Sarnia initially reported a spill of industrial solvents. It was initially estimated that 157,500 litres of methyl ethyl ketone and methyl isobutyl ketone were released to the St. Clair River.⁵ As a precaution, in order to protect human health, downstream users (as far south as Windsor and Amherstburg) were notified, while 2 water treatment plant intakes were closed (Wallaceburg and Walpole Island First Nation). These two plants remained closed for 3 and 4 days respectively. Meanwhile, the contaminant plume travelled slowly down the St. Clair River, Lake St. Clair and Detroit River for a period of 1 month. During this time, extensive monitoring was conducted within the affected rivers and lake as well as at water intakes along the route of the plume, to confirm that the quality of drinking water was not impaired. Sampling continued until March 1, 2004, at which time the plume had finally dissipated.
- On June 11, 2004, a fire broke out at the Crompton Company facility, an organic chemical plant located in Elmira. An explosion at a large waste water tank produced a fireball and large quantities of smoke, which was carried westward into the town by the wind. In addition, it was initially estimated that 2,000 to 4,000 litres of contaminated firefighting water entered Canagagigue Creek, which required notification of downstream water users as a precaution. As a precaution, residents were asked to stay indoors for the duration of the incident.
- On October 26, 2004 Goldcorp Inc., a metal mining facility located near the Municipality of Red Lake, released mine effluent containing arsenic into Red Lake itself. As a result of the release, the Cochenour Water Treatment Plant (which serves 300 residents) was closed for 2 days. During this time, the Municipality of Red Lake provided residents with an alternate supply of drinking water brought in from a neighbouring water treatment plant.
- On April 15, 2005 a transformer explosion at Bruce B Nuclear Power Plant located in Kincardine resulted in the release of non-PCB transformer oil to Lake Huron. The capacity of the transformer was 77,000 litres of which an unknown quantity was released to the lake. A visible plume of oil was reported on the lake surface between Kincardine airport and MacGregor Point, which prompted a public warning issued by the Medical Officer of Health for recreational water users to avoid the effected area.

For many of the less serious spill violations, the Ministry works cooperatively with those responsible to voluntarily mitigate any impacts and prevent a reoccurrence. In lieu of voluntary actions, the Ministry may initiate mandatory compliance actions. As part of its mandatory compliance toolkit, the Ministry may issue orders in response to spills. Most often, these orders include requirements, among others, to provide spill incident investigation reports, conduct impact assessments, develop spill prevention and/or contingency plans, produce sampling plans and/or implement process specific changes. Furthermore, depending on the circumstances of the spill, the Ministry may refer an incident to the Investigations and Enforcement Branch, which after conducting an investigation, the Government may choose to pursue prosecution. However, it may take several years and significant resources on both sides for a case to proceed through the courts.

Some of the factors that may be considered when determining the appropriate response to an incident include, among others:

⁵ As this matter is before the courts and this volume may be a fact in issue, no further comment is available at this time.

- Seriousness of the spill (i.e., quantity spilled, toxicity, human health/environmental impacts, etc.)
- Negligence on the part of the responsible party
- How the public interest is best served
- Actions taken by the facility before, after and during an incident

All of the Ministry's actions, from voluntary abatement to prosecution, are designed to mitigate the effects of a contravention and to deter regulated parties from violating environmental legislation in the future.

Compliance and Enforcement

Spills reported to the Ministry vary significantly in severity, from small releases (i.e., <1 litre) to very large spills (i.e., >18,000,000 litres). Each spill is evaluated by Ministry staff on a case-by-case basis to determine the appropriate response. Currently, possible compliance and/or enforcement responses to an incident may include:

- Education and outreach
- Written violation notice
- Voluntary abatement plans
- Issuance/suspension of a certificate of approval or permit
- Issuance of a Provincial Officer's/Director's order
- Issuance of a ticket under Part I of the Provincial Offences Act (POA)
- Undertaking an investigation and prosecuting offences under Part III of the POA

Both during and after a given incident, the Ministry will seek to work cooperatively with the responsible parties in order to help address the impacts of a contravention and to prevent its reoccurrence. Regardless of which compliance/enforcement tool is used to respond to a specific occurrence at the outset, the Ministry's Compliance Policy and operating procedures calls for staff to formulate a response to an environmental incident using a risk-based approach and to apply their professional judgement in order to determine the most appropriate tool or mix of tools to address the situation. Responsible parties that are subject to Ministry action will continue to have the opportunity to consult with the Ministry, and where a Provincial Officer has written an order to require action, parties have a legal right to request Director's reviews and appeal to the Environmental Review Tribunal (ERT).

Bill 133 – Environmental Enforcement Statute Law Amendment Act (EPA), 2004, if passed would amend the Environmental Protection Act and the Ontario Water Resources Act (OWRA) to strengthen the administrative penalty provisions in the EPA and OWRA with the introduction of a new Environmental Penalties framework. This is in line with the recommendations put forth by IPAT. As part of its final report, IPAT concluded that fines in their current state are not a sufficient deterrent against unlawful discharges. The report stated "offenders have not received sufficient (or in some cases any) penalties for spill events and may be considering spill related fines as a cost of doing business."

Bill 133, if passed, would create the authority for the Ministry to order facilities to have spill prevention and spill contingency plans in place to prevent or reduce the risk of a spill; or prevent, decrease or eliminate any adverse effects that result or may result from a spill or other discharge.

Environmental Penalty orders would provide Ministry staff with a new compliance tool that could be issued quickly in order to deter non-compliance with the EPA (Environmental Protection Act) or OWRA (Ontario Water Resources Act) and prevent reoccurrence of a given incident. Environmental Penalties may be issued for unlawful discharges under the EPA, OWRA, or for other contraventions under the EPA or OWRA including a failure to comply with an order or an approval. Up until this point – the Province has had to rely wholly on prosecutions to penalize persons who contravene the EPA and the OWRA. Civil administrative penalties like the proposed environmental penalty orders gives the Ministry a swift enforcement mechanism to induce a violator to take quick action to abate the impacts of a contravention and prevent its recurrence.

The concept of issuing administrative penalties for violations of environmental law is common in many jurisdictions in both Canada and the United States. In Canada, the provinces of New Brunswick, Saskatchewan, Alberta and British Columbia have instituted administrative penalty regimes as part of environmental legislation. In the United States (US), administrative penalties, both at the federal and state level, have been used for the last 30 years to encourage compliance with their environmental statutes. The American penalty regime can apply to everyone, from large corporations to the general public. In contrast, if Bill 133 is passed, then the Government of Ontario intends to, by regulation, apply Environmental Penalties to industrial facilities that are included as part of MISA. The government has no intention of applying Environmental Penalties to municipalities or agricultural operations. The US penalty regime also covers a breadth of violations – from administrative infractions to spills. In Ontario, the government intends to develop regulations that would primarily target requirements related to unlawful discharges. Furthermore, as stated previously, Environmental Penalties, in conjunction with other tools in the enforcement/compliance toolkit, would be used primarily when addressing significant issues. The regulations will be developed, in consultation with stakeholders, so as to provide a level of certainty to regulated parties and consistency in the application of the penalties. At the time of issuing draft regulations, the Ministry will also post policies on how EP Orders will be used, and how they will be incorporated into the Ministry's existing compliance and enforcement framework.

As a new tool in the Ministry of the Environment's compliance and enforcement toolkit (see Figure 7 – Appendix A), Environmental Penalties would provide several advantages, including:

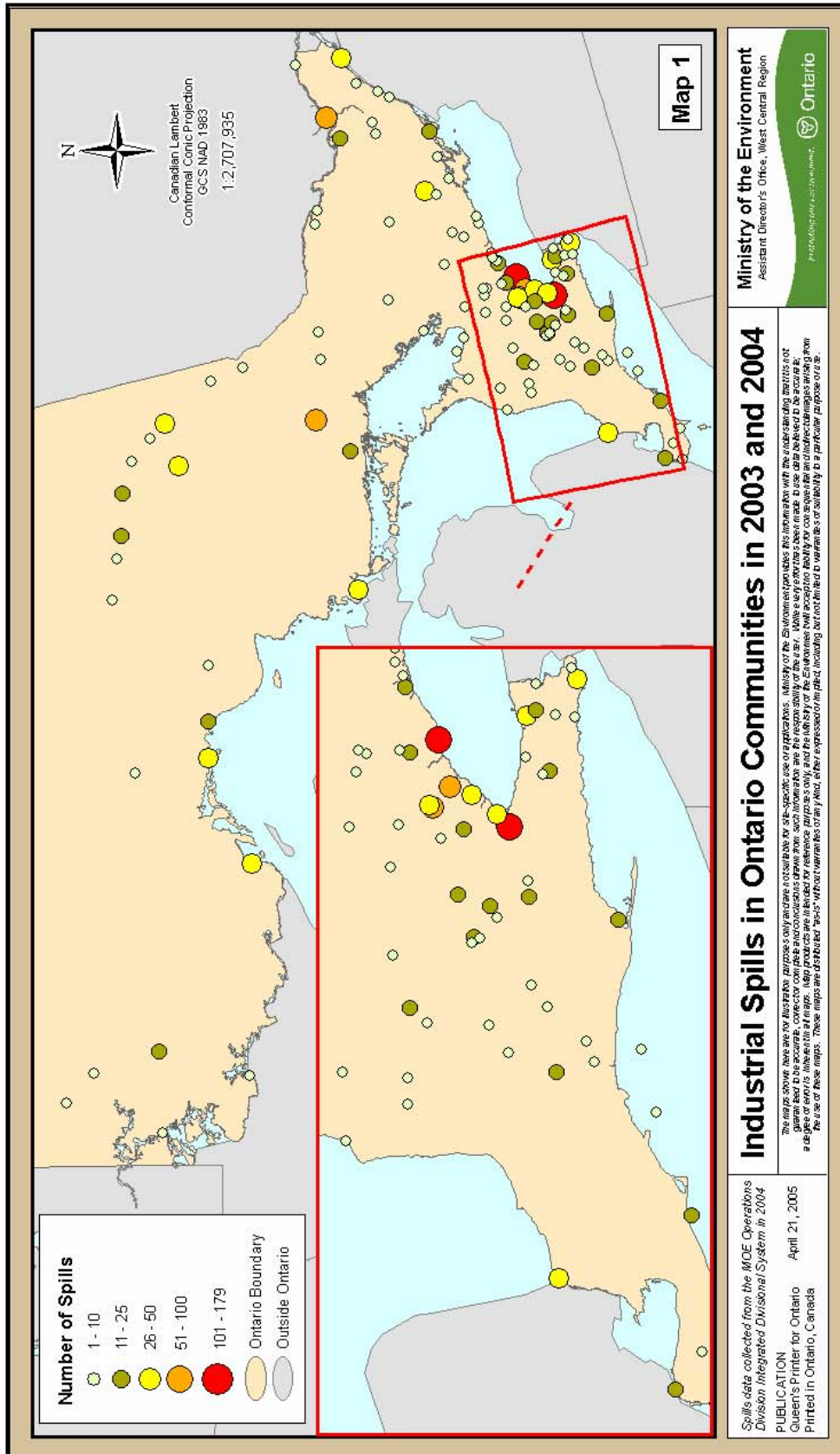
- Environmental Penalty orders would be issued relatively quickly compared to the time it takes to lay an information under the POA. This will induce facilities to take swift action to abate the effects of the contravention and prevent its recurrence. As stated previously, a prosecution takes a significant amount of the Ministry's time and resources, which limits its use and effectiveness as a deterrent for spills. For example, some cases have remained before the courts in excess of 5 years.
- Environmental Penalty orders could be issued with the opportunity to seek reductions in order to reward good performance (before, during and immediately after an incident) or penalize poor performance, as necessary. This flexibility encourages facilities to strive towards improved environmental performance.
- Bill 133 also provides authority to the Ministry and the violator to enter into a settlement agreement which may lead to the reduction or cancellation of a penalty. A settlement agreement process opens lines of communication between the Ministry and responsible parties by bringing them together in a negotiated effort to achieve compliance and prevent future occurrences. It also allows the Ministry and the facility to implement innovative measures to address any harm that may have been

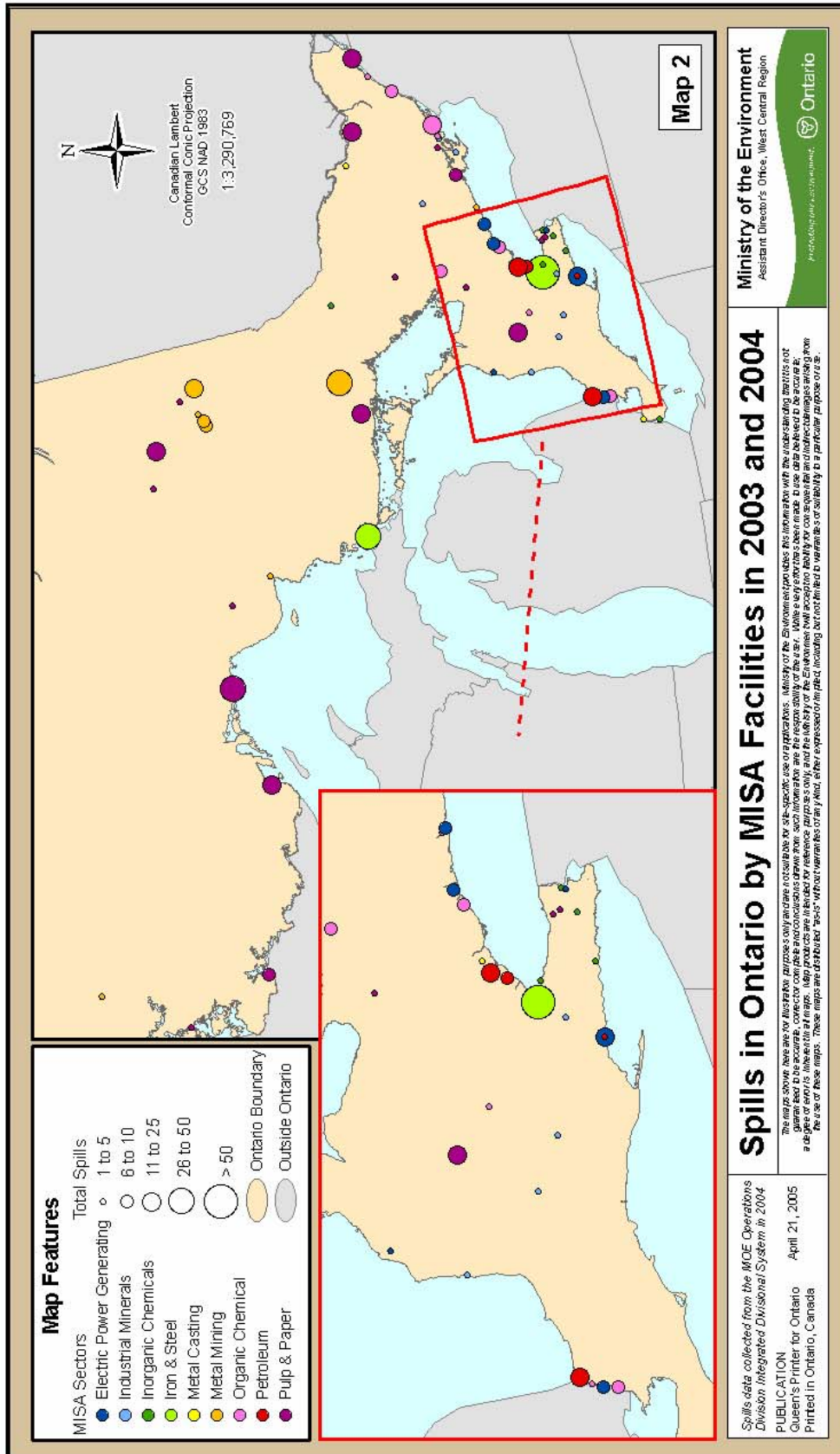
caused by a contravention. For instance, in the United States, as an alternative or in addition to paying a penalty, violators will engage in a Supplemental Environmental Projects (SEPs).

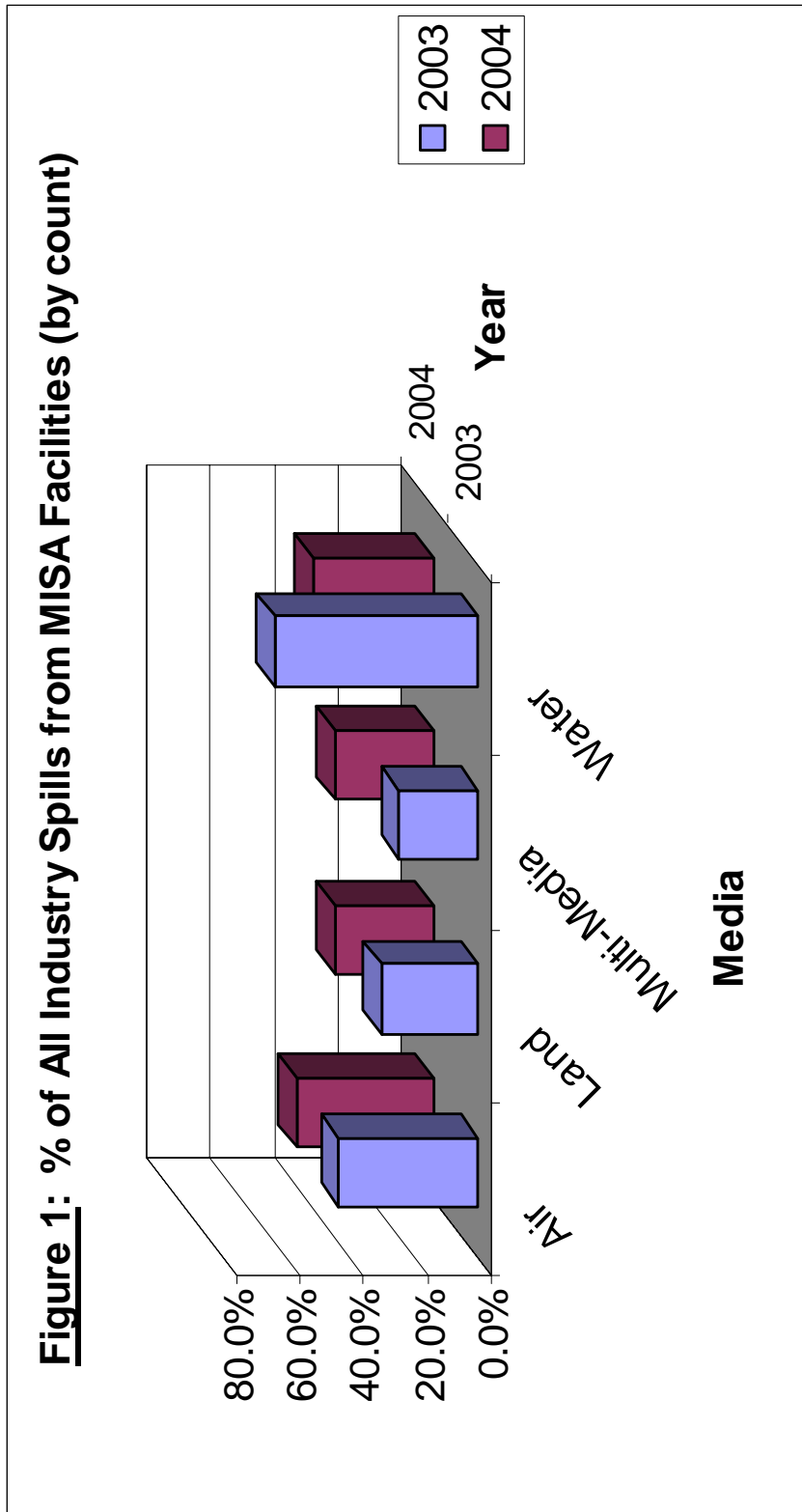
- Environmental Penalties, which are not judicial in nature, do not have the same stigma associated with a prosecution or conviction.

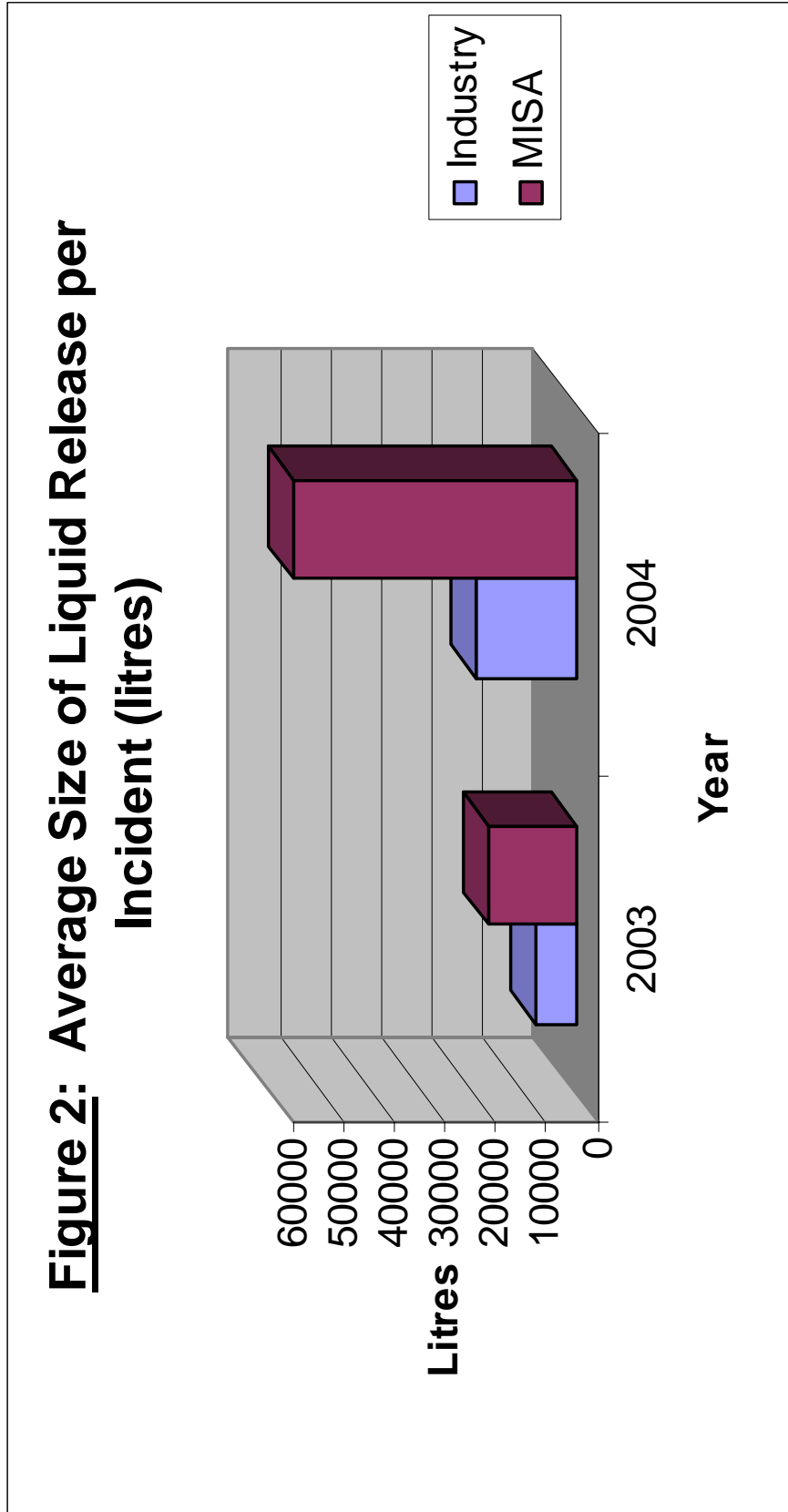
As a result, Environmental Penalties would serve as a complementary addition to the existing compliance/enforcement toolkit, thereby supporting the Ministry's efforts to ensure compliance with Ontario's environmental legislation and protect the environment.

Appendix A









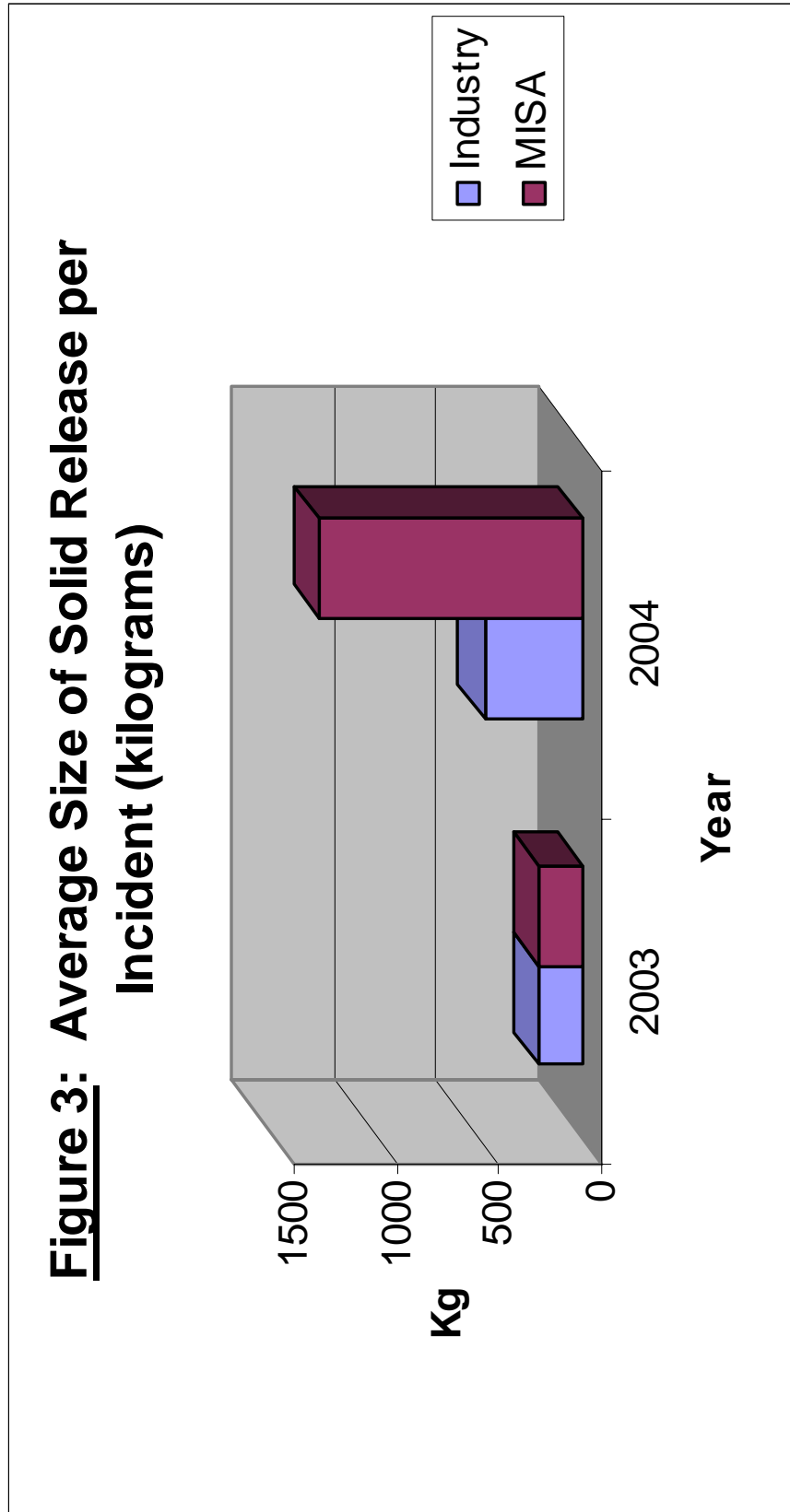


Figure 4: % of Spills by MISA Sector (2003/04 Average)

