

October 19, 2004

Ms. Helen McPhail  
Environmental Assessment Officer  
Nova Scotia Department of Environment & Labour  
PO Box 697  
Halifax, NS  
B3J 2T8

Tel: (902) 424-6250  
Fax: (902) 424-0503

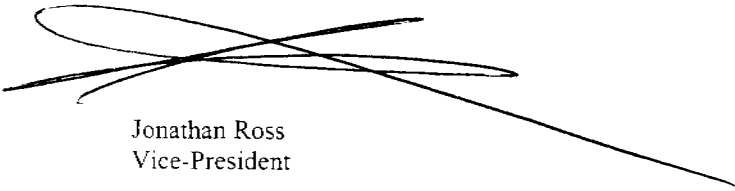
Subject: Environmental Assessment – 171 Chain Lake Drive, Halifax, NS

Dear Ms. McPhail:

The Nova Scotia Department of the Environment and Labour has informed John Ross and Sons Limited that under the Environmental Assessment Regulations, it now requires approval as a Dangerous Waste/Dangerous Goods Handling Facility for handling and storage of lead acid batteries.

As such, please consider this letter as our Class I Environmental Assessment Registration application.

Sincerely,  
JOHN ROSS AND SONS LIMITED



Jonathan Ross  
Vice-President

**TABLE OF CONTENTS**

	Page
Environmental Assessment Application-Lead Acid Batteries.....	1
Schedule of Attachments.....	5
1.0 SNSMR Plan and Property Listing Information.....	6
2.0 Site Plans and Figures .....	11
3.0 Property Site Description.....	15
4.0 Contingency and Emergency Response Plan.....	16
5.0 Training Materials for TDG .....	23
6.0 Training Material for WHMIS .....	27
7.0 Employee Training Cards WHMIS .....	30
8.0 Spill Report Form.....	40
9.0 MSDS – Lead Acid Batteries .....	41

## Minimum Requirements

The following information is the minimum required for registration, as prescribed in the 1995 Environment Assessment Regulations.

a. Name of the Undertaking

The undertaking is a Class 1 "Battery Storage Facility"

b. Location of the Undertaking (see Schedule 1)

171 Chain Lake Drive  
Halifax, NS  
B3S 1B3

c. Identification

The company name is John Ross and Sons Limited. The registered owners of the subject property are Mr. and Mrs. Norman and Sharron Ross, who jointly own both Advance Recycling Limited and John Ross and Sons Ltd. (see attached letter in Schedule 1). The contact for this Environmental Assessment is Mr. Jonathan Ross, Vice-President of John Ross and Sons Limited.

d. Nature of the Undertaking

John Ross and Sons Limited is a handler for storage of used lead-acid batteries prior to transport to an approved recycling facility. Our site at 171 Chain Lake Drive contains our offices, an Enviro-Depot as well as our scrap metal facility (accepting principally non-ferrous metals), from which we run our operations. As part of our business, we accept drop-offs of spent lead acid batteries from the marketplace, and ship them on to authorized recycling centers, where they are broken down into their basic components and recycled. Scrap batteries are transported and received at the site from private companies and persons with occasional pick-ups by own personnel with company trucks. Quantities from most customers range from one to ten batteries per customer with approximately 10 customers per day or 40 customers per week with a few customers deliver quantities larger than ten batteries per week. All batteries are inspected for cracks upon unloading from the delivery vehicle. If any batteries are damaged or cracked they are put into a self-contained plastic tub, where the acid is collected to mitigate a potential release to the environment. If greater quantities of batteries are received from a customer, the batteries would be inspected for leaks and the sealed batteries palletized and shrink-wrapped under the same requirements for handling and shipping of smaller quantities of batteries.

e. The Purpose and Need for the Undertaking

As a depot for storage of lead acid batteries, John Ross and Sons Limited requires a warehouse facility to store scrap used batteries prior to off-site disposal at an authorized recycling location outside of Nova Scotia. The subject facility at 171 Chain Lake Drive suits the need for a storage site to support the current proposed operations.

f. Operation Schedule

The hours of operation for our facility are Monday to Friday 7:00 a.m. to 5:00 p.m. and Saturday from 7:00 a.m. to 12:00 noon. There are no planned shutdowns at this time except for statutory holidays.

g. Description of the Undertaking

John Ross and Sons Limited will pick up and receive used lead acid storage batteries from the field, unload the batteries for storage in the designated areas of the warehouse, and store them in the designated area until we have a minimum of between 20 to 22 pallets to complete a full shipment. Each pallet consists of 50 batteries.

h. Approvals Required

As advised by the Department of the Environment, John Ross and Sons Limited will require an approval as a Class I undertaking pursuant to Schedule "A" of the Environmental Assessment Regulations. John Ross and Sons Limited also requires approval for a dangerous waste/dangerous goods handling facility pursuant to Section 10 of the Activities Designation Regulation, for which the above Class 1 approval is required.

i. Sources of Public Funding

There are no sources of public funding for this undertaking.

## Environmental Details

### 1. Surrounding Area

The facility is situated in a commercial/industrial area known as Bayers Lake Business Park. This area is dedicated to commercial and industrial businesses. There is no residential development in the area. The facility is located on its own lot consisting of one building surrounded by commercial development. Commercial and retail business occupy the properties to the north on the opposite side of Chain Lake Drive and to the west. Also located to the west is a Municipal Recycling Facility (hazardous waste depot) operated by Miller Waste. The property to the east is currently undeveloped. Right-of-ways for NS Power are located immediately west and south of the subject building.

The subject property is serviced by municipal water, sewer and storm water infrastructure provided by the Halifax Regional Municipality (HRM). Groundwater flow from the site is anticipated to be to the south towards Bayers Lake. Through review of the local area and the well log data base on-file with the Nova Scotia Department of the Environment and Labour, no drilled potable water supply wells were located within one kilometer of the subject property. Since the site and surrounding properties are serviced by municipal water system, the groundwater in the area is not expected to be used as a potable water supply, either now or in the future.

The nearest ecological receptor to the subject property is Bayers Lake located approximately 100 meters south of the proposed storage location. According to the NSDEL regional inspector, Bayers Lake is occasionally used for recreational purposes, such as fishing. No water withdrawal approvals for Bayers Lake are currently on-file with the NSDEL. The Bayers Lake catchment area receives some of the surface water from the Chain Lake Drive and Susie Lake Crescent areas, as well as drainage from one surface stream which extend from Geizer Hill to the northeast under Highway No. 102 and Chain Lake Drive into Bayers Lake. Based on surface water drainage maps, aerial photographs of the Bayers Lake area and NSDEL personnel, a small tributary extends southeast from the eastern side of Bayers Lake toward Second Chain Lake. First Chain Lake, Second Chain Lake and Long Lake, located approximately 1.5 kilometers southeast of Bayers Lake on the opposite side of Highway No. 103, form part of the back-up water supply for the HRM.

### 2. Spill Considerations

A spill occurs if one or more batteries leaks acid. This is usually a slow drip, and what little acid escapes stays by the battery. Larger spills involving multiple batteries are rare. In general, if an acid spill were to happen, the acid tends to stay in a pool on the floor slab, which is graded toward the central area of the building and does not follow any particular course. Given the location and construction details of the temporary interior battery packaging and storage area, the potential for acid leaving the building is extremely remote. It would involve a very large spill to overflow the graded (1% to the north) storage area and exit the bay door (Schedule 2, Figure 2C). In the extremely remote chance that it did happen, the acid would be remain on the pavement, where it would be neutralized before it could reach the edge of the asphalt approximately 25 to 30 metres from the building. Also, given the existing grade elevations of the paved area and a calculated slope to the southwest of less than 1%, most of the acid would flow very slowly and remain close to the building where it will be neutralized. No drains or catch basins are present in the floor of the interior of the building or in the immediate vicinity of the exterior battery storage area. Only one storm drain is located outside in the entrance way next to Chain Lake Drive. Surface water drainage across much of the property is overland to small surface ditches to the west and south of the property.

### 3. Volume of Batteries

Mainly used batteries are stored at the facility with new batteries located in some of the vehicles on the property. On average, 10 customers per day or 40 customers per week drop-off batteries at John Ross and Sons Ltd. and approximately two to three transport vehicles per week leave the site with a shipment of batteries for recycling.

If storage area was full of pallets, the maximum number of scrap batteries is 1100 units. The average amount of scrap batteries held prior to transport to the recycling facility is 22 pallets, 50 units per pallet or 1100 units weighing 44,000 lbs. or 20,000 kg. The maximum amount of acid stored or contained in scrap batteries is 4,400 liters. There is no waste acid stored on the site.

#### 4. Transportation Routes

Local transportation routes used for battery shipments are Chain Lake Drive and Highway 102. These are all streets in and around Bayers Lake Business Park. Trucks do not travel through residential areas and only carriers licensed to transport dangerous goods are used.

#### 5. Handling Procedures and Documentation

Scrap batteries received at our facility are inspected for leaks when they are transferred to us either when they are unloaded manually from personal vehicles (i.e. car or truck) or via forklift off larger vehicles with partially or fully assembled pallets. The new shipments are thoroughly inspected prior to being stored in the temporary compound inside the building where they remain until a full pallet is assembled. Any leaking batteries are segregated from the pallet in a self-contained plastic tub.

Following inspection and packaging of the sealed batteries, the full pallets of used batteries are stretch-wrapped in plastic to ensure a secure load and moved from the warehouse building via a forklift to the exterior metal storage container. The pallets that are stored on the floor of the warehouse or storage container have sufficient space to allow unobstructed access for inspections and movement of fire protection equipment and decontamination equipment around the pallets. All work is done by employees trained in the handling of dangerous goods. The handling, packaging and transportation work is generally completed in teams to ensure safety. All movements of scrap batteries into and out of the building are recorded and documented.

Batteries will be shipped from our facility to recovery destinations outside of Nova Scotia for recycling. Approximately two to three shipments per week of used batteries currently leave the John Ross and Sons Ltd. property, but this is contingent upon accumulation of a sufficient number of pallets to fill a transport vehicle. When a sufficient number of pallets have been assembled, the transport vehicle will be temporarily located on the asphalt immediately adjacent to the storage container. A forklift will be utilized to transfer the palletized batteries from the storage container to the transport vehicle.

All handling, storage and transport of the batteries either on-site by John Ross and Sons personnel or off-site by carriers licensed to transport dangerous goods in compliance with the *Transportation of Dangerous Goods Regulations* and the *Inter-Provincial Movement of Hazardous Waste Regulations (2002)*. Records of all batteries received and shipped from the facility are maintained at the site.

Periodically, routine inspections for cracks or disintegration of the asphalt or concrete surface in each of the storage areas by site personnel will be performed to monitor the integrity of the floor and reduce the potential for loss of waste into the subsurface.

#### 6. Activities and Staffing

The facility is dedicated to scrap metal recycling including the storage of used lead acid batteries. There are fourteen employees currently on-site.

#### 7. Building Layout

A copy of the land & building layout is included as Schedule 2. The batteries are temporarily stored on wooden pallets on the concrete floor in the western corner of the warehouse, which is labeled as the 'temporary battery storage and packaging area'. The location of exterior storage container where the batteries are stored prior to transport off-site for re-cycling is southwest of the warehouse, approximately 10 metres from the building. The proposed storage building is a fully contained steel container underlain by a concrete slab with 100-mm berm and a secondary wooden plank floor for storage of the pallets. Our Site Description is included as Schedule 3.

#### 8. Battery Maintenance and Handling

The great majority of used and scrap batteries that pass through the warehouse are handled like any non-dangerous inventory item. Nearly all batteries are filled with acid, but rarely do they leak. Therefore they are received, stored and shipped with no handling related to their acid content. There is no waste acid stored on site, except in scrap batteries. Waste acid that leaks from scrap batteries is neutralized and removed according to spill containment procedures described under point #9, below.

#### 9. Spill Containment

Batteries contain a dilute solution of sulfuric acid. The acid reacts with soda ash, which is the commercial name for sodium carbonate, a non-hazardous powder, to produce sodium sulphate, a neutral salt. Carbon dioxide and water, which are substances found naturally in the environment, are the other substances produced in this reaction. When a small spill or leak occurs, the following procedures take place;

- Stop leak or spill at source
- Ventilate the area
- Remove combustible material
- Contain the spill material and manage it as a hazardous waste
- Wear protective clothing
- Segregate the spill and neutralize the soda ash or an appropriate acid absorbent
- Test to make sure acid is neutralized with pH paper
- Dispose of neutralized by-products with the general waste

This procedure is handled by employees trained in the handling of dangerous goods, and protective equipment is worn. For example: eye protection, gloves and protective clothing. Emergency response equipment, including sodium bicarbonate first aid kits, eye wash center and fire extinguishers, is stored in a metal locker adjacent to the main bay entrance door and a second locker by the entrance to the exterior storage container.

#### 10. Contingency Plan

A contingency plan is in place in case of a major spill or incident. The plan is consistent with the Nova Scotia Contingency Plan Criteria developed in May 2004. A plan copy is attached as Schedule 4. Our Emergency Response Plan in case of fire is attached as Schedule 4a.

As discussed in Schedule 4a, all temporary handling and storage of batteries is conducted on a concrete floor inside the building which is graded gently to the north and has no floor drains. The areas outside of the building are paved with asphalt to prevent direct contact of the spill with the underlying soils. The exterior storage container for the batteries has metal walls and a wooden floor to contain spills. The concrete pad on which the container is situated has a 100-mm berm around the perimeter to prevent releases of acid leaks. Routine inspections for cracks or etching of the asphalt adjacent to the warehouse entrance, concrete floor in the temporary packaging area or concrete berm under the storage container are performed to ensure all of the acid is neutralized and prevent the potential loss of waste into the underlying soils. Any cracks or separation of joints in the areas of battery handling or storage will be sealed or painted with an acid resistant compound to reduce or eliminate the potential of sub-surface migration and impacts to local ecological receptors.

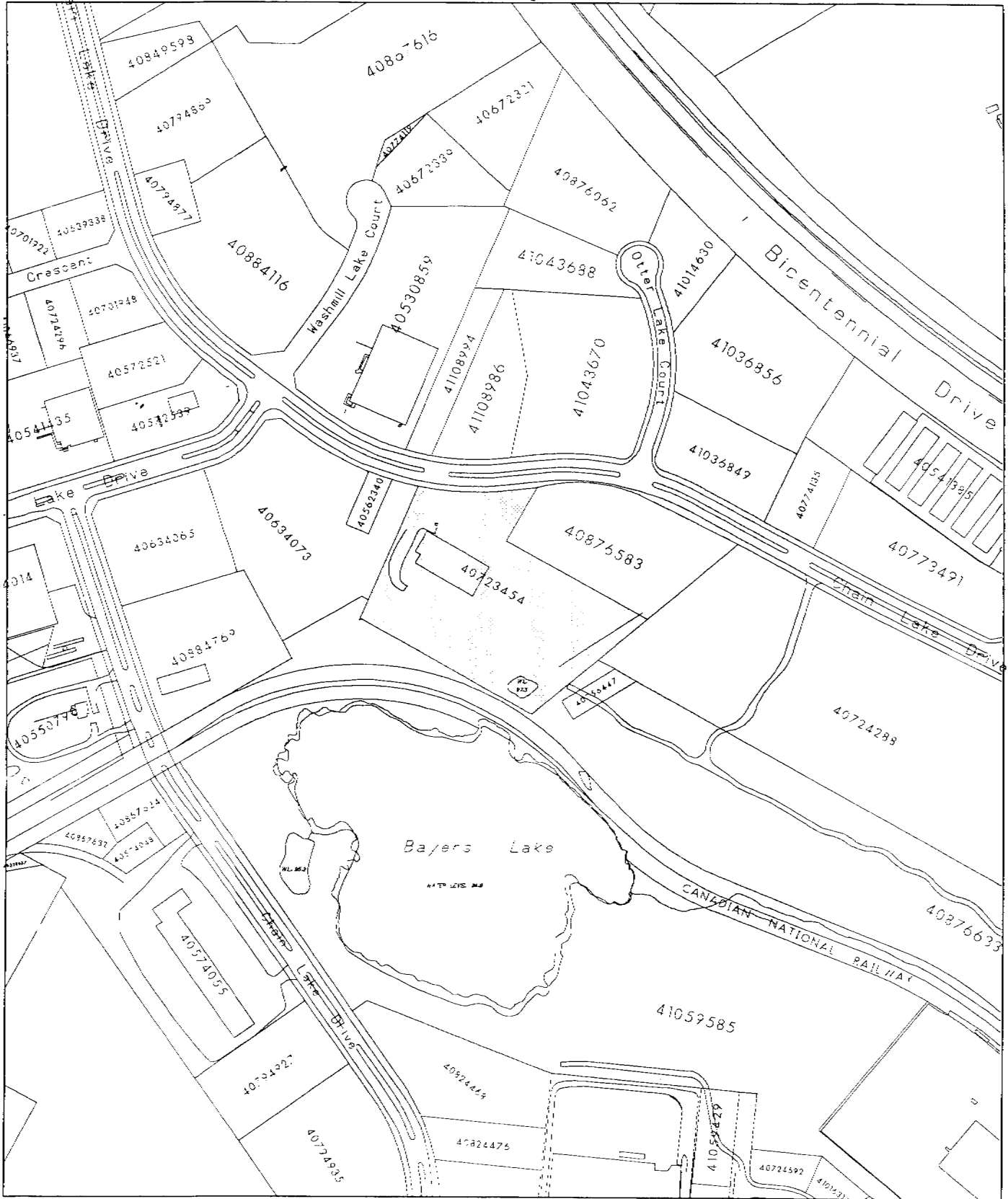
Also, as a precaution, prior to release of any liquid which may accumulate within the berm area around the metal storage container, a periodic test of the liquid with pH paper would be conducted prior to released via a manual gate valve on the south side of the berm. If the pH of the liquid in the berm is 6 or greater, then free release of the water onto the asphalt surface will be completed; however, if the pH is less than 6, the acidic liquid must be neutralized with sodium bicarbonate prior to release. All test personnel and pH results with a list of any actions taken would be documented.

#### 11. Employee Training

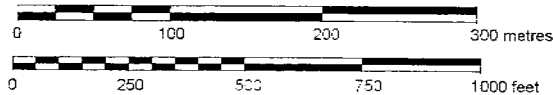
As part of the new employee orientation process, all employees that are involved in the handling of batteries in any procedure are given training in WHMIS and Transportation of Dangerous Goods, specifically related to the handling of lead acid storage batteries. Materials are provided concerning MSDS sheets, product labeling, and protective gear for handling batteries. Materials are also provided concerning shipping paperwork, corrosive goods identification, and safe and secure methods for storing and shipping batteries. Employees are also given on-the-job training for containing and handling spills of battery acid, as outlined in the contingency plan. The training materials issued for TDG are included as Schedule 5. The training materials used for WHMIS are included as Schedule 6. Examples of training cards issued to employees are included in Schedule 7.

**List of Schedule Attachments**

	Page
Schedule 1	Service Nova Scotia and Municipal Relations Plan and Property Listing Information.....6
Schedule 2a	Site Location Map.....11
Schedule 2b	Site Plan.....12
Schedule 2c	Building Layout and Proposed Battery Storage Area .....13
Schedule 2d	Topographic Contour Map of Subject Area .....14
Schedule 3	Property Site Description.....15
Schedule 4	Contingency Plan for Releases of Dangerous and Hazardous Wastes .....16
Schedule 4a	Emergency Response Plan – Fire.....21
Schedule 5	Training Materials for Transportation of Dangerous Goods .....23
Schedule 6	Training Material for WHMIS.....27
Schedule 7	Employee Training Cards .....30
Schedule 8	Spill Report Form .....40
Schedule 9	MSDS – Lead Acid Batteries .....41



Scale 1 : 5000



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This map is a graphical representation of property boundaries which approximate the size, configuration and location of properties. Care has been taken to ensure the best possible quality, however, this map is not a land survey and is not intended to be used for legal descriptions or to calculate exact dimensions or area.

**THIS IS NOT AN OFFICIAL RECORD.**



**John Ross & Sons  
Ltd.**

171 Chain Lake Drive  
Halifax, NS  
B3S 1B3

Phone: 902-450-5633  
FAX: 902-450-5664

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August 28, 2004

To Whom It May Concern;

Advanced Recycling Limited and John Ross & Sons Limited are both owned by Norman & Sharron Ross.

Regards,



Christine I. Collicutt, B.Comm  
Accountant

**SERVICE NOVA SCOTIA AND MUNICIPAL RELATIONS  
(PARCEL INFORMATION REPORT - LAND INFORMATION CENTRE)**

**DETAILED LISTING**

```

LIMS PID      :40723454                      Parcel Status :ACTIVE
Parcel Type   :STANDARD PARCEL              Start Date    :1996-02-05
Civic No.    :171                          Last Update   :2003-11-10
Street       :CHAIN LAKE DRIVE
City         :HALIFAX
Lot #        :LCT 19B-1
Postal Code  :
Parcel Area  :29497.10 SQUARE METRES      Municipality  :CITY OF HALIFAX
Parcel Maps  :05N1164NW, 05N1154NE, MU0808 County        :HALIFAX
    
```

===== OWNERSHIP INFORMATION =====

```

Owner Names                                     Prov Ctry
-----
ADVANCED RECYCLING LIMITED
    
```

Manner of Tenure :None

Mailing Address :171 CHAIN LAKE DR  
 HALIFAX NS CA B3S1B3

===== REFERENCE INFORMATION =====

YEAR	REFERENCE NUMBER	FILE TYPE	REFERENCE BOOK/PAGE	DATE	REFERENCE DESCRIPTION
CROSS-REFERENCES.....					
1996	21915				Drafting Transmittal
1996	22127				Drafting Transmittal
1996	40594830				Addition Parcel
1996	40741928				Addition Parcel
PLANS.....					
1996	31229	FP	D344		
DOCUMENTS.....					
1996	3699		5830/ 366	19960130	Notice of Plan of Subdivision

===== ASSESSMENT INFORMATION =====

TAX ACCOUNT	CODE	DISTRICT	SUB-DISTRICT	FIELD CARD	VALUE
08685088		16			\$1379600.00

+++++-----+ END OF REPORT +-----+

**Disclaimer:**

Ownership and all information in this report is believed to be an accurate reflection of registered documents affecting the lot, parcel or area of land to which it relates, however, it is not intended to be relied upon by the reader as advice on the current state of any title to land. A search of the records at the appropriate Registry of Deeds office may be required to determine the current owner(s) of the lot, parcel or area of land under consideration. **THIS IS NOT AN OFFICIAL RECORD.**

**SERVICE NOVA SCOTIA AND MUNICIPAL RELATIONS  
(PARCEL INFORMATION REPORT - LAND INFORMATION CENTRE)**

**DETAILED LISTING**

```

LIMS PID      :40594830
Parcel Type   :STANDARD PARCEL
Civic No.    :
Street       :CHAIN LAKE DRIVE
City         :HALIFAX
Lot #        :LOT 19B
Postal Code  :
Parcel Area  :27091.00 SQUARE METRES
Parcel Maps  :05N1164NW, 05N1154NE, MU0808

Parcel Status :RETIRE
Start Date    :1992-01-27
Last Update   :1997-12-15

Municipality :CITY OF HALIFAX
County       :HALIFAX
    
```

===== OWNERSHIP INFORMATION =====

```

Owner Names                                     Prov Ctry
-----
ADVANCED RECYCLING LIMITED
    
```

Manner of Tenure :None

Mailing Address :None on File

===== REFERENCE INFORMATION =====

YEAR	REFERENCE NUMBER	FILE TYPE	REFERENCE BOOK/PAGE	DATE	REFERENCE DESCRIPTION
<b>CROSS-REFERENCES</b>					
1991	00589853			19911216	Parent Parcel Number
1992	17509				Drafting Transmittal
1996	21913				Drafting Transmittal
1996	22127				Drafting Transmittal
1996	43723454				Consolidated Parcel Number
<b>PLANS</b>					
1991	28293	FP	D294		
1996	31229	FP	D344		
<b>DOCUMENTS</b>					
1991	54337		5177/ 299	19911201	Deed
1991	54338		5177/ 301	19911201	Mortgage
1996	3699		5830/ 366	19960130	Notice of Plan of Subdivision

===== ASSESSMENT INFORMATION =====

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TAX ACCOUNT  CODE  DISTRICT  SUB-DISTRICT  FIELD CARD  VALUE
-----
    
```

There is no Tax Assessment information on file for this PID.

+++++ END OF REPORT +++++

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**SERVICE NOVA SCOTIA AND MUNICIPAL RELATIONS  
(PARCEL INFORMATION REPORT - LAND INFORMATION CENTRE)**

**DETAILED LISTING**

LIMS PID :40741928	Parcel Status :RETIRED
Parcel Type :STANDARD PARCEL	Start Date :1996-02-05
Civic No. :	Last Update :2001-11-27
Street :CHAIN LAKE DRIVE	
City :HALIFAX	
Lot # :PARCEL A	
Postal Code :	Municipality :CITY OF HALIFAX
Parcel Area :2406.00 SQUARE METRES	County :HALIFAX
Parcel Maps :05N1154NE, MU0808	

===== OWNERSHIP INFORMATION =====

Owner Names	Prov Ctry
-----	-----
ADVANCED RECYCLING LIMITED	NS CAN

Manner of Tenure :None

Mailing Address :None on File

===== REFERENCE INFORMATION =====

YEAR	REFERENCE NUMBER	FILE TYPE	REFERENCE BOOK/PAGE	DATE	REFERENCE DESCRIPTION
----	-----	----	-----	-----	-----
CROSS-REFERENCES.....					
1996	21915				Drafting Transmittal
1996	22127				Drafting Transmittal
1996	C0589853			19960119	Parent Parcel Number
1996	40723454				Consolidated Parcel Number
PLANS.....					
1996	31229	FP	D344		
DOCUMENTS.....					
1996	3699		5830/ 366	19960130	Notice of Plan of Subdivision
1996	13015		5857/1160	19960410	Deed
1996	13016		5857/1162	19960410	Notices (all others)
2001	7647		6718/ 816	20010312	Assignment

===== ASSESSMENT INFORMATION =====

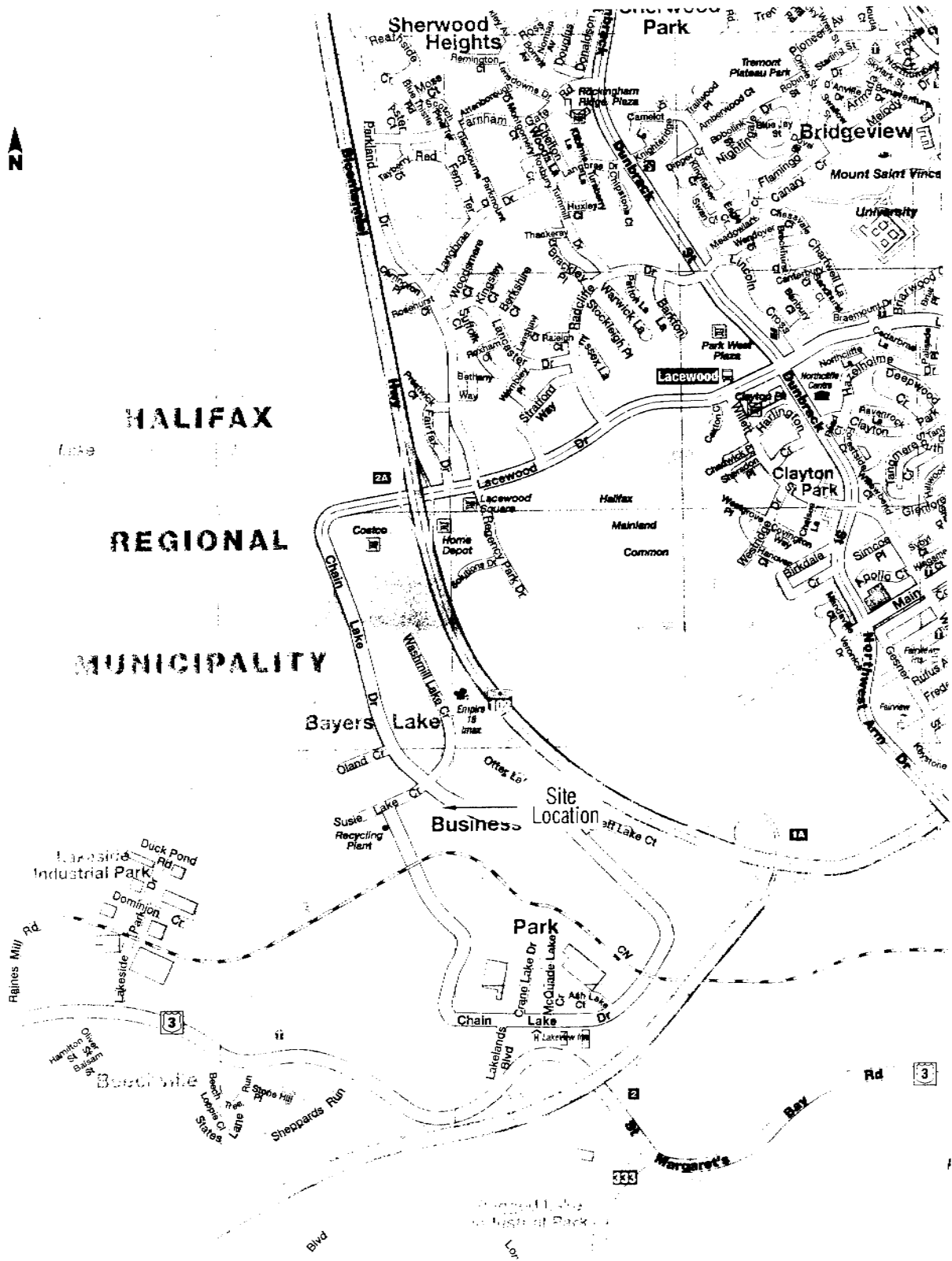
TAX ACCOUNT	CODE	DISTRICT	SUB-DISTRICT	FIELD CARD	VALUE
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There is no Tax Assessment information on file for this PID.

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**HALIFAX**  
REGIONAL  
MUNICIPALITY

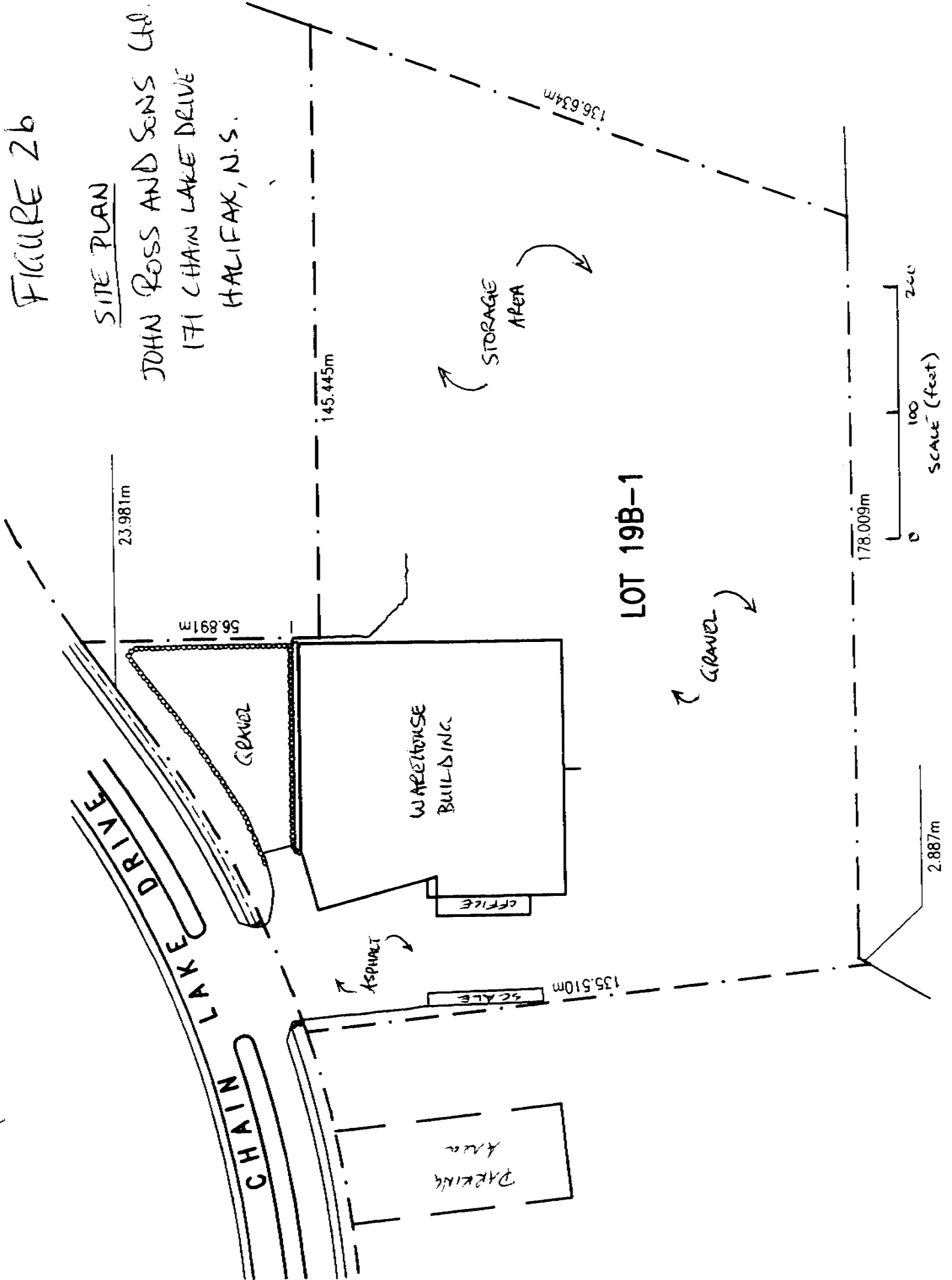
Site Location Map  
Environmental Assessment  
171 Chain Lake Drive, Halifax, N.S.

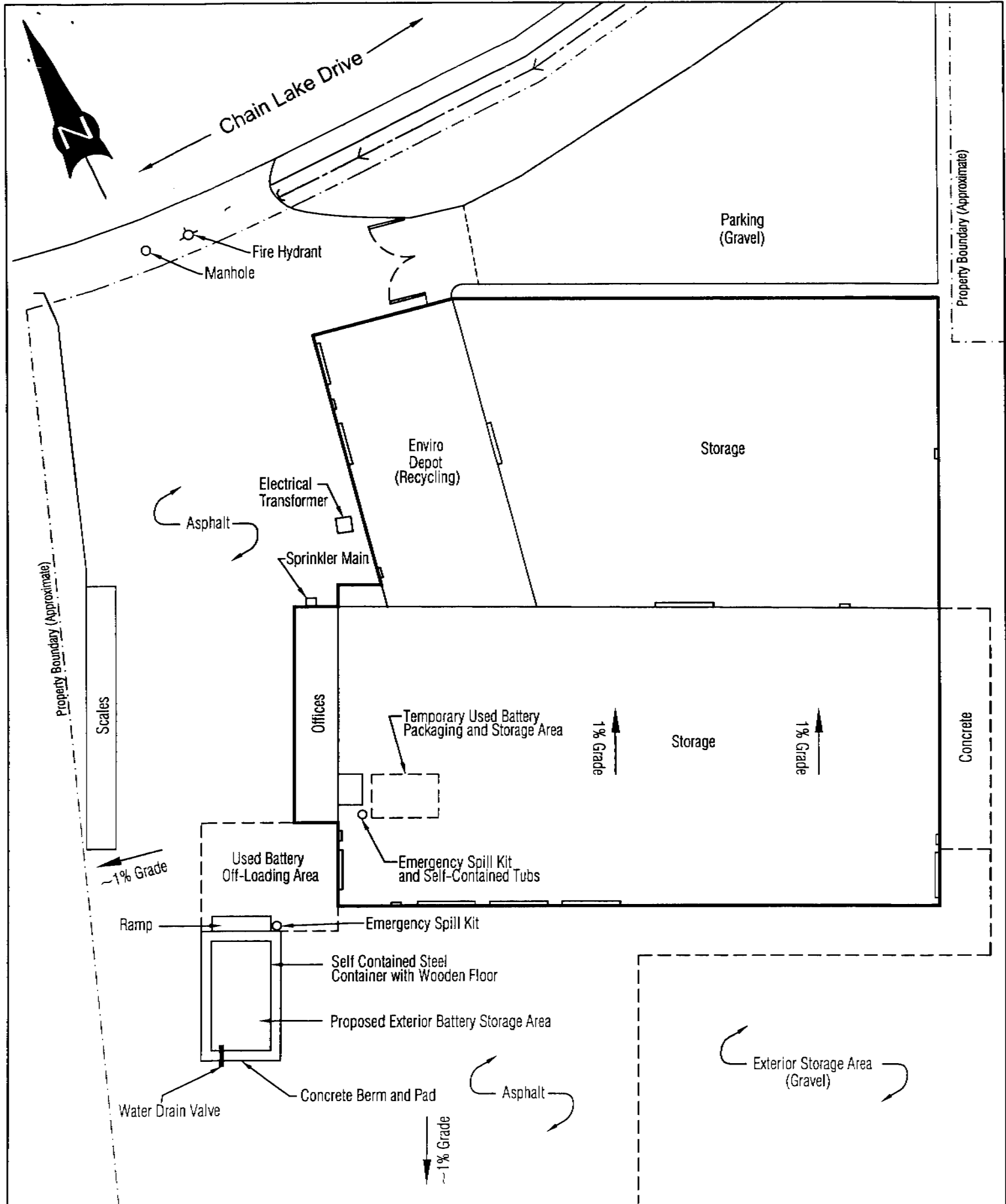
FIGURE 2A  
Page 11

FIGURE 2b

SITE PLAN

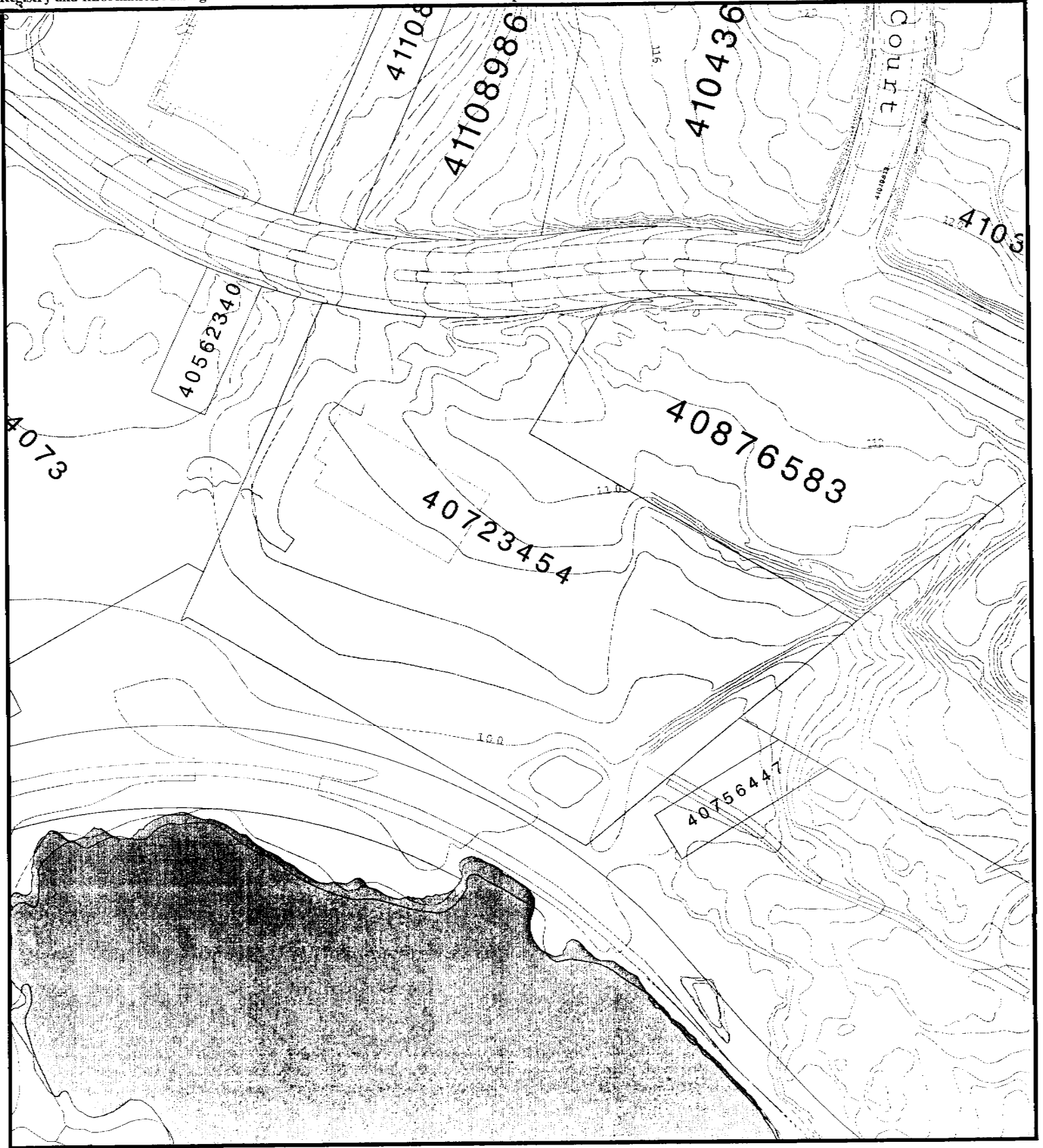
JOHN ROSS AND SONS LTD.  
171 CHAIN LAKE DRIVE  
HALIFAX, N.S.



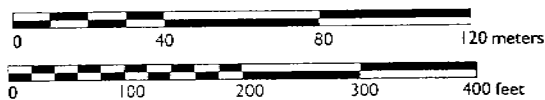


Building Layout & Proposed Battery Storage Area  
 Environmental Assessment  
 171 Chain Lake Drive, Halifax, N.S.

DATE: August, 2004	SCALE: 1:500	DRAWN BY:	CKD BY:	JOB No.	FIGURE 2C
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Scale 1 : 2000



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This map is a graphical representation of property boundaries which approximate the size, configuration and location of properties. Care has been taken to ensure the best possible quality, however, this map is not a land survey and is not intended to be used for legal descriptions or to calculate exact dimensions or area.  
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was recorded in the Registry of Deeds Office at Halifax in the County of Halifax, N. S., at 1:45 o'clock P. M. on the 23rd day of Dec. A.D. 1971 in Book No. 3177 at Pages 299-300 as Document Number 54337

300

James G. Haly, Deputy Registrar of Deeds for the Registration District of Halifax County

All that certain lot, piece or parcel of land situated in the City of Halifax, Province of Nova Scotia, being Lot 19B as shown on a plan titled "Plan Of Survey Of Lot 19B Subdivision Of Lands Acquired By City of Halifax Halifax Business Park, Bayers Lake Area Chain Lake Drive Halifax, Nova Scotia", dated November 21, 1991, certified by Terrance R. Doogue, N.S.L.S. and being on file in the office of the Director of Engineering and Works for the City of Halifax as plan #00-19-30997. The said Lot 19B being more particularly described as follows:

Beginning at a point on the southern street line of Chain Lake Drive where it is intersected by the southeastern boundary of a 24.385 metre wide Nova Scotia Power Corporation right of way, (Bk. 4702 Pg. 808);

thence in an eastwardly direction along the southern street line of Chain Lake Drive following the arc of a curve to the left having a radius of 265.000 metres for a distance of 19.338 metres to the northwestern boundary of Lot 19A (proposed);

thence S 23° 19' 30" W along the northwestern boundary of Lot 19A (proposed) for a distance of 10.786 metres to the southwestern boundary of Lot 19A (proposed);

thence S 60° 33' 15" E along the southwestern boundary of Lot 19A (proposed) for a distance of 222.000 metres;

thence S 49° 44' 23" W for a distance of 136.634 metres to the northeastern boundary of lands shown on the aforementioned plan as a proposed green belt, also being the southwestern boundary of an 18.288 metre wide Nova Scotia Power Commission easement;

thence N 60° 33' 15" W along the northeastern boundary of said proposed green belt, also being the southwestern boundary of an 18.288 metre wide Nova Scotia Power Commission easement, for a distance of 178.009 metres to an angle therein;

thence S 59° 55' 30" W along the northwestern boundary of said proposed green belt, also being the southeastern boundary of an 18.288 metre wide Nova Scotia Power Commission easement, for a distance of 2.887 metres to a point thereon, said point being distant 1159.140 metres on a bearing of N 00° 48' 09" W from Nova Scotia co-ordinate monument #10158;

thence N 23° 19' 30" E along a southwestwardly prolongation of the southeastern boundary of a 24.385 metre wide Nova Scotia Power Corporation right of way, (Bk. 4702 Pg. 808) and the southeastern boundary thereof for a distance of 135.510 metres to the point of beginning.

The above described Lot 19B contains an area of 27,091.1 square metres (291,611 square feet).

Subject to a 54.864 metre wide Nova Scotia Power Corporation transmission right of way (Bk. 4862 Pg. 225) and an 18.288 metre wide Nova Scotia Power Commission easement (expropriation plan filed December 7, 1922), as shown on the aforementioned plan.

The above mentioned transmission right of way and easement together contain an area of 14,427 square metres (155,294 square feet).

Bearings are grid, referable to a modified transverse mercator projection 3° zone with central meridian at 64° 30' west

SCHEDULE 4

JOHN ROSS AND SONS LIMITED

CONTINGENCY PLAN

FOR BATTERY ACID RELEASES AND SPILLS

Table of Contents

	Page
1. Introduction	17
2. Administrative Policy	17
3. Purpose	17
a) Hazard Assessment	17
b) Resources and Roles / Responsibility	17
4. Implementation and Operation	18
a) Notification	18
b) Response Procedures	
5. Site Restoration	20
6. Disposal	20

SCHEDULE 4

1. INTRODUCTION

This contingency plan applies to John Ross and Sons Limited facility at 171 Chain Lake Drive in Halifax, Nova Scotia. The contingency plan is the responsibility of John Ross and Sons Limited as it applies to its operation at the above location.

2. ADMINISTRATIVE POLICY

The administration of John Ross and Sons Limited ensures that all of its employees that are involved in the handling of lead acid batteries in any procedure are given training in WHMIS and TDG. Materials concerning MSDS sheets, product labeling, protective gear for handling batteries and information regarding shipping paperwork, corrosive goods identification, and safe and secure methods for storing and shipping batteries are located either in the work area or directly from the response team commander.

This contingency plan and employee training will be updated where necessary to comply with changes in company policy, industrial emergency planning standards, industrial codes of practice and applicable legislation. The plan will also be reviewed following any emergencies at the site to review the effectiveness of the plan and determine what, if any, changes are required to ensure the plan is suitable to emergency situations.

3. PURPOSE

The purpose of the contingency plan is to recognize the workplace hazard associated with the storage of dangerous goods and hazardous materials, and to show the responses and actions required to contain a spill, and minimize or nullify its impact on the environment.

John Ross and Sons Limited is a handler for storage of used lead-acid batteries prior to transport to an approved recycling facility. Our site at 171 Chain Lake Drive contains our offices, an Enviro-Depot as well as our scrap metal facility (accepting principally non-ferrous metals), from which we run our operations. As part of our business, we accept drop-offs of spent lead acid batteries from the marketplace prior to shipment to recovery facilities outside Nova Scotia. Waste batteries are dropped off at the facility where they are inspected by trained site personnel for possible acid leaks. If any leaking batteries are detected, they are isolated and placed in self-contained plastic tubs for storage and neutralized with sodium bicarbonate prior to palletization. The remaining batteries are stacked on a pallet and shrink-wrapped in plastic. Once approximately 50 units are received and packaged for transport, the pallet is moved via forklift from the temporary location in the warehouse to the metal storage container located on the asphalt covered area immediately outside the building. Once a stockpile of approximately 22 pallets have been collected, arrangements are made with a company licensed in the transport of dangerous goods for shipment of the batteries to recycling facilities outside the province of Nova Scotia

a) Hazard Assessment

The primary type of waste dangerous goods locate at the subject facility is waste battery acid. Batteries contain a dilute solution of sulphuric acid. Once 50 batteries are packaged and stored on a pallet within the temporary storage area inside the main warehouse building, the pallet of batteries is transferred to the self-contained exterior container for storage. Once approximately 22 pallets, or 1100 batteries are accumulated on-site, the pallets are transported off-site to the disposal facility.

Potential adverse effects of an acid spill are acid burns to an employee's skin or inhalation of fumes during neutralization of any spills with sodium bicarbonate. Therefore, protective equipment and clothing are required and the area must be well ventilated for the safety of all personnel.

b) Resources and Roles / Responsibilities

For small spills classified as less than 5 kilograms or 5 litres of acid, neutralize the acid by pouring on soda ash, and dispose of the residue as a non-hazardous material. Use pH paper to confirm the acid has been neutralized, and the

resulting material should have a pH level as close to 7 as possible. Spills over 5 litres follow the same procedures. When cleaning up the spill, gloves, eye protection and protective clothing must be worn. Batteries that are leaking or have cracks are put into a self-contained plastic tub. Small spills on the warehouse floor should be neutralized with soda ash, and swept up and disposed of with the general waste from the building. The self-contained storage container and secondary concrete berm around the perimeter of the exterior storage area would contain the acid should there be a large spill. The surrounding areas outside the warehouse are asphalt covered with a concrete loading dock to reduce migration of any acid spills and potential contaminate the underlying soil.

The following emergency equipment will, at all times, be located in close proximity to the battery storage areas (as shown in Schedule C, Figure 2c) to allow for quick and effective response in the case of an emergency spill:

- 40 litres of Soda Ash (See Schedule 2c for location)
- Shovel, broom & pail
- Eyewash
- Safety glasses
- Rubber gloves and apron
- Acid resistant boots
- Dry chemical fire extinguisher
- pH paper

On-site trained personnel of John Ross and Sons Limited will be available and qualified to deal with situations regarding the proper handling, storage, packaging and disposal. Up to five employees including (but not limited to) the following persons will be on-site during regular business hours:

Jonathan Ross  
George Squires  
Shannon Strickland  
Daniel Connors

Pat McKay  
Derek Ross  
Doug McGowan

The response team commander is in charge of the countermeasures phase of any clean-up. This person is responsible for performing, or ensuring the performance, of the following:

- ✓ Make decisions on the severity of the spill, best clean-up method, need for outside assistance, and notification of authorities and company personnel.
- ✓ Commit resources to clean up the spill, and source additional materials if required.
- ✓ Direct the people and resources used in the clean-up operation
- ✓ Act as the focal point for information exchange on the spill and clean-up
- ✓ Preserve sample of contaminated materials, if any occur.
- ✓ Prepare and submit a report, detailing the spill response and clean-up, if necessary.
- ✓ Notify and communicate with personnel representing government agencies.

#### 4. IMPLEMENTATION AND OPERATION

##### a) Notification

Any spill no matter how small should be reported to the Canadian Coast Guard (local 426-6030) regardless of size. An example of a small spill; if a battery was dropped by accident and cracked there would be 4 litres of acid to contend with and would be dealt with as per Schedule 4, Section 4b. Larger spills may occur, such as damage to an entire pallet of batteries (50 batteries with 4 litres of acid in each battery), in which case there would be an estimated

volume of 200 litres of acid released. The procedure to handle a spill of this volume would also be dealt with the same as per Schedule 4, Section 4c but may require the assistance of two or more employees. The materials involved in lead acid battery spills are described as:

**BATTERIES, WET, FILLED WITH ACID, PIN # UN2794, CLASS 8, PACKING GROUP III**

A spill report is enclosed, covering the reporting in the event of a spill (see Schedule 8). An MSDS sheet is also included for Lead Acid Battery, Wet, Filled with Acid (see Schedule 9).

All spills must be reported in accordance with the following:

- ✓ Reportable Spills – Transport Releases  
Employees and drivers must report all spills. Each spill must be reported with top priority.
- ✓ On-site – Spill Reported By:  
Mr. Pat McKay – Warehouse Foreman
- ✓ On-site – Spill Reported To:  
Mr. Jonathan Ross – Vice President/ Response Team Commander
- ✓ Notification of Authorities:  
Mr. Jonathan Ross – Vice President/ Response Team Commander

The Response Team Commander shall be responsible for reporting spills to the following;

- Environmental Canada  
Regional Spill Reporting Numbers  
1-902-426-6200 (24 hours / 7 days a week)
- Canadian Coast Guard  
24 / 7 Reporting Numbers  
902-426-6030 or Toll Free 1-800-565-1633
- Local Police or RCMP/Medical Help/Ambulance:  
Emergency Number – 911
- Nova Scotia Department of Environment and Labour (NSDEL)  
Regular Hours (8:30am - 4:30pm Monday to Friday) – 424-7773  
After Hours Emergency Number – 1-800-565-1633 (Coast Guard)
- John Ross and Sons Limited Office:  
902-450-5633
- John Ross and Sons Personnel:  
Mr. Pat McKay – 902-450-5633 (Office)  
902-479-0722 (After Office Hours)  
  
Mr. Jonathan Ross – 902-450-5633 (Office)  
902-423-6909 (After Office Hours)
- CANUTEC – Canadian Transport Emergency Centre  
24-Hour emergency response – 1-613-966-6666 collect  
Cellular Phone Number - \*666 (Canada only)

b) Response Procedures

Acid spills are to be neutralized by applying powdered sodium bicarbonate on the spill and disposing of the residue. Litmus or pH paper is to be used to confirm the acid has been neutralized. The resulting material should have a pH level close to 7. When cleaning up the spill, gloves, eye protection and protective clothing must be worn. The building has a concrete floor which is graded gently to the north and has no floor drains. The areas outside of the building are paved with asphalt to prevent direct contact of the spill with the underlying soils. The exterior storage container for the batteries has metal walls and a wooden floor to contain spills. The concrete pad on which the container is situated has a 100-mm berm around the perimeter to prevent releases of acid leaks. Regular inspection of the concrete and asphalt surfaces will be conducted and any cracks sealed with an acid resistant compound.

The following is a step-by-step summary of the emergency plan activation procedure in the case of an acid spill:

- notify the response team commander
- tend to any medical emergencies
- notify authorities as appropriate
- ensure the site is physically safe, with no moving or non-chemical hazards, and isolate the area
- assemble all required equipment for the cleanup
- isolate the batteries that are leaking, and prevent further leakage
- remove all batteries from the spill area
- ventilate enclosed areas
- neutralize the acid with soda ash
- contain the spill so it does not spread or leave the building
- test to ensure the acid is neutralized
- dispose of the residue

5. SITE RESTORATION

Neutralize all acid and sweep up the residue. The concrete and pavement of the warehouse floor, and the surrounding area, if necessary may be swept, and washed. When this is done, the site may be used for handling batteries again, with no environmental impact.

6. DISPOSAL

Neutralized acid, as a sodium sulphate salt may be disposed as a non-hazardous material. Batteries may be recycled into their lead, acid and plastic components, through regular recycling channels.

Battery Collection and Disposal for recycling will be done by an external private company and transported for disposal at an authorized recycling facility.

Schedule 4a

**Emergency Response Plan – Fire**

**Purpose:**

To minimize loss and injury, any type of fire, indoor or outdoor, should be reported to the fire department by calling 911. Should there be a building fire, all building occupants are to be evacuated for their personal safety. Fire extinguishers have been provided within the building to extinguish small fires.

**Scope:**

All employees are to be aware of the fire emergency plan and take prompt action according to the following procedure:

Procedure

- ❑ **BE PREPARED -**  
Know the location of the fire exits, fire alarms, and fire extinguishers in your workplace. Familiarize yourself with the procedures below and participate in fire extinguisher training so that you are prepared in case of a fire.
  
- ❑ **IF YOU DISCOVER A FIRE –**  
If you see or hear a fire, or smell smoke, pull the closest fire alarm.
  
- ❑ **TAKE IMMEDIATE ACTION AND DIAL 911 –**  
Dial 911 from a safe location and give the operator all the pertinent facts. When the 911 operator answers, give the following information:
  - **YOUR NAME**
  - **PHONE NUMBER and**
  - **LOCATION THAT YOU ARE CALLING FROM, (John Ross & Sons, 171 CHAIN LAKE DRIVE, HALIFAX, NOVA SCOTIA).**

Give the precise nature of the fire, (i.e.: car fire, chemical fire, electrical fire, outdoor grass fire, building fire, fuel fire). Tell operator which entrance the fire truck should enter and describe our location. Indicate whether there are any injuries, and the number and extent of those injuries. **DO NOT HANG UP** until given permission to do so by the operator. Dispatch an employee to the entrance to guide the fire truck to the fire area.

- ❑ **USE OF EXISTING EQUIPMENT –**  
You might try to put out the fire, if it is small enough, using existing equipment – use your best judgement – if trained and confident. In the event that the fire is small enough to be extinguished by a fire extinguisher, fire extinguishers have been placed around the building and are identified. Become aware of the fire extinguisher locations and familiar with accessibility. If the fire does not go out or spreads after attempting to extinguish flames, leave the area immediately and close all doors on your way.
  
- ❑ **EVACUATION –**  
If the fire is clearly out of control, notify all others in danger, **YELL “FIRE”** and evacuate all personnel from the building to the designated muster station outside the building. Assist people

with disabilities, and children, as required. Fire wardens are to ensure that all employees and visitors are out of the building and proceed out behind them, closing but not locking doors as they leave. Leave buildings by the nearest safe exit. All employees, guests and visitors are to proceed to the designated muster station in the employee parking area and ensure that their names are on a list of those who are out of the building. This list will be prepared by a designated fire warden. Material Safety Data Sheets are to be taken by the fire warden and made available to the fire department, as required. All personnel are to wait outside the building as directed by the Fire Department. You are to re-enter the building only after the fire department has given permission to do so.

- ❑ **IF YOU ARE TRAPPED –**
  - Dial 911 and give a description of your location.
  - Place towels/clothes (wet if possible) at the bottom of the door.
  - Open windows, if possible.
  - Stay close to the floor if there is a lot of smoke.
  
- ❑ **IF YOUR CLOTHES CATCH FIRE –**
  - Stop whatever you are doing.
  - Drop to the ground.
  - Roll to smother the flames.

If someone else's clothes catch fire have them stop, drop and roll. Try to smother the flames with a piece of clothing.

- ❑ **USING AN EXTINGUISHER –**

Think "PASS":

  - Pull the safety pin at the top of the extinguisher.
  - Aim the nozzle/hose at the base of the flames.
  - Squeeze or press the handle.
  - Sweep from side to side at the base of the fire until it is out.
  
- ❑ **KNOW YOUR EXTINGUISHER –**
  - Type A (green triangle) – use for paper and wood.
  - Type B (red square) – use for flammable liquids such as gas, oil, paint
  - Type C (blue circle) – use for electrical fires involving wires or appliances.
  
- ❑ **NOTIFY MANAGEMENT –**

The manager, if not on-site, is to be notified immediately. Emergency numbers are posted on an emergency contact list.

**Responsibility:**

Fire wardens are responsible to ensure everyone is out of the building and directed to the specified muster station for a roll call and to take a copy of the MSDS listing to be presented to the Fire Department. Other employees are to report to the muster station and should not re-enter the building until advised to do so by the Fire Department. Supervisors are to ensure that senior management has been notified of the fire, if not on location.

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President

---

Date



## TRANSPORTATION OF DANGEROUS GOODS TRAINING

### COURSE CONTENT: "Clear Language" Regulations Introductory Course

- Introduction
  - The 1992 TDG Act
  - Background and purpose of the Regulations and amendments thereto
  - Shipper's and carrier's responsibilities
  - Training, certification and enforcement
  - Penalty of fines
- Classification
  - 3 Classes of Dangerous Goods
  - Division, packing groups & subsidiary classification
  - Shipping names, UN numbers & reference list of common products
- Documentation
  - Information required on shipping document
  - Location, date, time and retention of documents
  - Multiple deliveries
- Safety Marks
  - Labels and other safety markings
  - Location, replacement and removal
  - Placards and signs
- Means of Containment
  - Packaging standards including UN Specifications
  - Preparation and reuse of means of containment
- Emergency Actions (Accidental Release)
  - Responsibilities for reporting & duty to respond
- Other Considerations
  - Special Situations - various exemptions
  - Other notes of transport (ATA, MDO, etc)

Questions, discussion and competency check

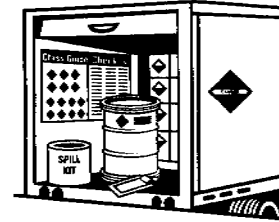
## WHAT IS TDGT?

Thousands of shipments of dangerous goods such as gas fires, propane and pesticides are transported every day on Canada's highways. The Transportation of Dangerous Goods (TDG) Regulations are intended to **protect the public** from the hazards of an accident, spill or leak.

The TDG system **provides information** to everyone who comes in contact with the dangerous goods – including emergency responders, if something goes wrong.

The regulations make sure that:

- ▶ a **shipping document** describes the dangerous goods
- ▶ **safe packaging** helps prevent spills and leaks
- ▶ **safety marks** such as **labels and placards** provide visual clues about the hazards of the dangerous goods
- ▶ **emergency actions** protect people and the environment in case of a spill or leak



## WHY DO I NEED THIS TRAINING PROGRAM?

The fact that you're reading this training manual means that your job – in some way – brings you in contact with dangerous goods. You might work in a warehouse preparing shipping documents, or you might load and unload trucks. You could be a long-distance truck driver hauling tanker loads of gasoline or a pickup and delivery driver handling small shipments.

This training program contains the basic information needed by everyone who works with dangerous goods, and will show you how your job fits into the picture. To prepare, handle or transport dangerous goods safely and correctly, you must:

- ▶ be trained
- ▶ know your responsibilities
- ▶ have a training certificate

Emergency responders are usually highly trained people, like firefighters, police officers or special chemical response teams. However, anyone might have to deal with an emergency involving dangerous goods, including a leader, driver, ambulance attendant or member of the public.

## PUTTING IT ALL TOGETHER

The roles and responsibilities of the various players are like the interlocking pieces of a jigsaw puzzle. If the shipper, handler, driver and emergency responders are trained and do their jobs properly, the public will be at less risk than there is in an accident involving dangerous goods. That's why you have to know your piece of the puzzle.



The Transportation of Dangerous Goods Regulations only apply on the highway, so the person who loads trucks does not need to be trained.

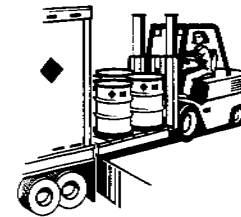
- ... TRUE FALSE

## HOW DO I FIT IN?

Everyone who handles dangerous goods, including the person who loads or unloads, is responsible for making sure the goods are transported safely to their final destination.

All the people involved should:

- ▶ understand the **hazards** of each class of dangerous goods
- ▶ recognize the hazards shown by **labels and placards**
- ▶ carry a **training certificate**
- ▶ **handle** dangerous goods carefully to prevent spills and leaks
- ▶ **take action** in case of a spill or leak



## Shipper

The person who prepares the shipment:

- ▶ finds out the classification of the dangerous goods
- ▶ packages the goods safely
- ▶ completes shipping document
- ▶ labels and marks the packages
- ▶ provides placards if necessary



## Driver

The person who transports the shipment:

- ▶ knows that the shipping document is complete
- ▶ makes sure that contents are labelled and marked
- ▶ makes sure placards, if required, are visible from the road
- ▶ makes sure the contents are loaded and secured properly
- ▶ knows the proper handling procedures



Who is responsible for ensuring that a driver has the correct training and a valid certificate? The shipper or the employer? Who is responsible for ensuring that the driver's training is up to date?

Each's responsibilities under the dangerous goods regulations include those of a shipper, handler and driver.

- ... TRUE FALSE

## TRAINING

Everyone who handles, prepares for transport or carries dangerous goods must be trained and certified. Your employer does not know what **type and level of training** you need.

In addition to the topics covered in this manual, your dangerous goods training **might include**:

- ▶ the use of safety equipment such as gloves or goggles
- ▶ safe loading and unloading procedures
- ▶ special training for explosives or toxic gases
- ▶ guidelines for selecting appropriate packages and containers
- ▶ more information about how to classify dangerous goods



Could a driver who has been certified to carry dangerous goods be trained? His training should include: (check 3 examples)

- recognition of dangerous goods labels
- safe operation of a forklift
- emergency procedures in case of a spill or leak

## Untrained Employees

Anyone who works with dangerous goods must be trained and certified. If you are an employer, you are responsible for ensuring that your employees are properly trained and certified.

It is your responsibility to ensure that your employees are properly trained and certified. If you are an employer, you are responsible for ensuring that your employees are properly trained and certified.

**CERTIFICATE**

The dangerous goods training certificate is issued by your employer and is good for 3 years. It can be in any size or format, but it's not valid unless it is signed by both you and your employer.

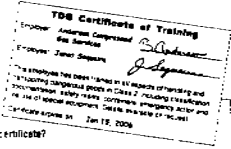
Whether you use the certificate in this manual or one issued by your employer, it must contain:

- ▶ your employer's name, address and signature
- ▶ your name and signature
- ▶ "Expires on" and the date it expires
- ▶ a brief description of the training you received

It is not transferable – If you change employers, a certificate must be issued by your new employer.

If you are self-employed, you can issue your own certificate. This means you have the responsibilities of both an employer and an employee. If you do contract work the company might ask you to take their dangerous goods training course as well.

You must keep your certificate with you or near you because you have to produce it at the request of a dangerous goods inspector.



**Question**

What piece of information is missing from this training certificate?



Products and substances are classified as dangerous goods if they could be hazardous during transport or when they spill or leak.

Everyone involved in transportation has to understand the hazards of dangerous goods. This includes shippers, handlers, drivers and emergency responders.

It is the responsibility of the shipper to know whether an item is flammable, toxic, corrosive, etc. and to find out how it should be classified under the dangerous goods regulations.

The manufacturer is usually the one who conducts the laboratory tests to determine whether the product fits into one or more of the 9 classes. The shipper may find this information by:

- ▶ looking it up in the list of dangerous goods
- ▶ checking a previous shipping document for the same product
- ▶ checking the Material Safety Data Sheet (MSDS) which often lists the dangerous goods classification along with other technical information and safe handling procedures
- ▶ contacting the manufacturer



**Shipping Document**

**CLASS 8 – CORROSIVES**

Corrosives can damage skin, metal or other materials. Even the vapours can be hazardous.



The best way to learn about the danger of corrosives is to understand how they are separated into packing groups:

**Packing Group I:** rapid, severe and permanent damage to skin.  
*Example: sulfuric acid*



**Packing Group II:** severe skin damage after moderate contact.  
*Example: battery acid*



**Packing Group III:** severe skin damage after longer contact, corrodes steel or aluminium.  
*Example: mercury*



Be careful – if you mix corrosives together or with other dangerous goods, this could cause a violent reaction and release toxic or corrosive vapours.



What is the packing group for sulphuric acid?

Every shipment of dangerous goods must be accompanied by a shipping document. Some of the information listed on the shipping document is for the use of emergency responders.

For example, if the vehicle is involved in an accident, the police or firefighters will check the shipping document to find out who to contact for more specific information about the dangerous goods.

This document doesn't have to be a special form just for shipping dangerous goods. It can be a waybill, trip ticket, manifest or pro-bill and might include information for other purposes.

However, if it's used to ship dangerous goods it must include specific information such as:

- ▶ date the document was prepared or given to the carrier
- ▶ 24-hour contact number of the shipper, or a phone number where the shipper can be reached and the dangerous goods contact person
- ▶ shipper's name and address

**Question**

A courier bill can be a dangerous goods shipping document, as long as it contains all the information that's required.



TRUE FALSE

**LOCATION OF DOCUMENTS**

In an emergency involving dangerous goods, the driver or emergency responder needs to find the shipping document as quickly as possible. It contains important details about the goods and who to contact for more information.

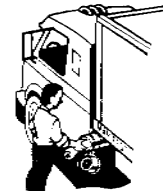
Shipping documents must be carried within the driver's reach.

When the driver leaves the cab, the documents must be left on the driver's seat, in a pocket on the driver's door or in an obvious place in the cab.



If the driver leaves the truck in a supervised area, a copy of the shipping document must be left with the person in charge.

If the trailer is detached from the tractor or the driver's eyes are withdrawn and left in an unsupervised area, the shipping document must be placed in a secure, identifiable, accessible location in a receptacle in the trailer.



**Question**

When transporting a truck in a supervised area, the shipping document must be left with the person in charge. Is this acceptable?



YES NO

LOADING DOCUMENT

TRANSFER OR DELIVERY

When the driver transfers the shipment, the next carrier must be given a copy of the shipping document.

When the driver delivers the shipment, the receiver must be given a document that identifies the dangerous goods. This does not have to be a complete shipping document. It could be a delivery ticket, waybill, electronic notification etc.

KEEPING COPIES ON FILE

Shippers and carriers must keep a copy of each dangerous goods shipping document for two years. This could be an electronic copy.

SMALL CONTAINERS

Small containers hold 450 litres or less (about 100 gallons). This measurement is also used for containers not designed to hold liquids.

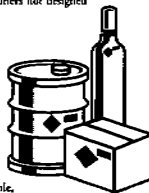
Small containers include:

- drums, pails and cans
cardboard boxes and crates
cylinders and cylinders

A label is usually 100 mm x 100 mm (about 4 inches x 4 inches). If the full-size label can't be used because of the size or shape of the container, a smaller label may be used - for example, on the shoulder of an acrylic cylinder.

Before handing over the dangerous goods to the driver, the shipper makes sure that each package or small container displays:

- a hazard label (for primary and subsidiary classes)
the shipping name
the UN number



Dangerous goods safety marks are often the first warning to someone that a product is hazardous. The person who needs this information might be a loader, driver or emergency responder.

For example:

- the 'skull and crossbones' on a label shows that a substance is toxic
the UN number on a placard tells firefighters what chemicals they are dealing with

The safety marks we use in Canada are part of an internationally recognized system and are shown on the Class Guide in the front pocket of this book. Look at the Class Guide and notice how each class is indicated either by a distinctive colour or symbol, or by the use of the class number in the bottom corner.

For example, there are four separate labels or placards for Class 2, Gases. The background colours are red, green, white or yellow and there are four different symbols at the top, but they all show the number '2' at the bottom.



These safety marks are put on at least one side of each small container (or on the top if nothing else is likely to be stacked on it).

The shipping name appears next to the label for the primary class.



The UN number can be shown with the shipping name or on the primary class label. If it is printed on the label, the prefix 'UN' is not included.

Question: Is the UN number shown correctly on this package? YES NO. Includes an image of a label with 'UN 1202' and a 'Material' label with a skull and crossbones symbol.

PLACARDING GUIDELINES

Vehicles carrying certain types and quantities of dangerous goods must display placards.

Summarize the UN number of the dangerous goods will have to be shown as a number on the placard or on an orange panel next to the placard.



Use the images and guidelines:

1. A 45-litre gas cylinder (a) requiring an emergency response assistance plan needs:

- placards and UN number

NOTE: Class 2 gases (toxic) require more than one side of the placard (see page 22).

2. Two 200-litre large containers hold:

- placards and UN number

If less than one package is placed over the trailer door, show:

- placards and UN number

3. A truck carrying less than 500 kg (1100 lb) of dangerous goods (flammable, toxic, corrosive, oxidizing, or flammable solids) needs:

- placards

4. A truck carrying more than 500 kg (1100 lb) of one class of dangerous goods needs:

- placards

If more than one class of dangerous goods is carried, show:

- placards and UN number

5. For a mixed load of over 500 kg (1100 lb) of various dangerous goods, the driver could use:

- three placards
or
larger placards



If any of the dangerous goods require an emergency response assistance plan or an in-transport hazard label, use Class 2 and apply:

- placards and UN number

Questions

1. Is this placard correct for a tank containing 1,800 litres of sodium hydroxide solution? (see page 22)

YES NO



2. Is this placard correct for a shipment of 800 kg of sodium hydroxide, solid? (see page 22)

YES NO



3. Would a truck carrying an 80-kg shipment of a poison require Class 6.1 placards? (see page 22)

YES NO

4. Could a driver display a DANGER placard for 400 kg of corrosives and 600 kg of flammable solids? (see page 22)

YES NO

5. Would a truck carrying 50 kg of highly toxic gases require placards and UN number? (see page 22)

YES NO

This section covers some of the special situations where some or all of the dangerous goods regulations do not apply.

They include:

- ▶ **up to 500 kg** – small shipments of dangerous goods
- ▶ **limited quantities** – small quantities of dangerous goods
- ▶ **personal use** – small quantities for personal use
- ▶ **samples** – dangerous goods that are being sent to a laboratory for testing

Other special cases are dangerous goods that are intended for:

- ▶ **medical use**
- ▶ **safety or operation of the vehicle**
- ▶ **agricultural purposes**

Permits for equivalent level of safety provide temporary variation to the rules.

Shipments to or from the U.S. could be subject to American regulations.

Different regulations apply to dangerous goods transported by:

- ▶ **road**
- ▶ **marine**
- ▶ **air**

**UP TO 500 KILOGRAMS**

Some dangerous goods are exempt from many requirements of the regulations in quantities up to 500 kg per truck.

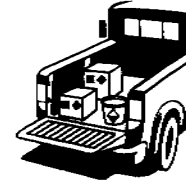
Each package or small container must:

- ▶ be a maximum of **30 kg**
- ▶ show the **shipping name**
- ▶ have **dangerous goods labels** and the UN number, or the marks required by other legislation (e.g., WHMIS)

The shipping document must include:

- ▶ the **primary class** (following the word "class")
- ▶ the **total number** of packages or small containers (following the words "number of means of containment")

The driver must have a dangerous goods training certificate.



**Emergency Actions**

If there is a spill or leak of dangerous goods while they are in your care, you need to:

- ▶ **protect yourself**
- ▶ **keep other people away**
- ▶ **try to keep the danger from spreading** (without putting yourself in danger)

If your company has an emergency response plan there might be special guidelines for you to follow.

In addition, you might check the following:

- Is there a fire extinguisher at the vehicle or on the loading dock?
- Is there a spill kit nearby?
- Do you have gloves or other protective equipment for handling dangerous goods?
- Is there a person available to help in case of an emergency?



They are loading a truck and accidentally spilled a plastic drum with the contents. The drum was marked "Corrosive Liquid".

They's main concern should be to:

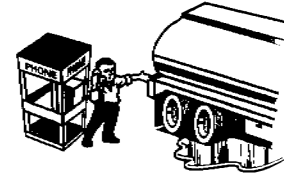
- ▶ make sure the spill does not ignite
- ▶ avoid inhaling the fumes and keep people away
- ▶ clean up the liquid before it damages the floor

QUIZ QUESTIONS

**REPORTING**

You must report immediately:

- ▶ if there is a spill or leak exceeding the amounts shown in the **reporting quantities** table
- or
- ▶ if there is damage to a truck or large container that could result in a spill or leak exceeding the reporting quantities
- or
- ▶ if, as a result of an incident, there is a need to **transfer** dangerous goods from one large container to another



REPORTING QUANTITIES	
Class	The most severe spill or leak is:
1 Explosives	Any quantity that could pose a danger or more than 50 kg
2 Gases	Any quantity that could pose a danger or a sustained release of 10 g in 100 s or more
3 Flammable Liquids	More than 250 L
4 Flammable Solids, Spontaneously Combustible, Dangerous When Wet	More than 25 kg
5.1 Oxidizers	More than 50 kg or 50 L
5.2 Organic Peroxides	More than 1 kg or 1 L
6.1 Toxic	More than 5 kg or 5 L
6.2 Infectious	Any quantity that could pose a danger or more than 1 kg or 1 L
7 Radioactive	Any quantity that could pose a danger
8 Corrosives	More than 5 kg or 5 L
9 Miscellaneous	More than 25 kg or 25 L

**PHONE CALLS AT (613) 996-0000:**

- ▶ If any employee notices a spill where 5.1, 6.1 or 6.2.
- ▶ If any gas leaks from a cylinder, has a surface release to the future.
- ▶ If any vehicle is involved.



1. Is a spill of 10 litres of petrol more than a reportable quantity?  
YES NO
2. Is a spill of 85 litres of gasoline a reportable quantity?  
YES NO
3. Is a spill of 10 litres of oil more than a reportable quantity?  
YES NO

QUIZ QUESTIONS

## WHMIS TRAINING MANUAL

### What is WHMIS?

WHMIS stands for Work Place Hazardous Materials Information System. It was implemented to provide a standard for designation of hazardous materials. The employer, under Federal and Provincial Legislation, has three duties:

1. To ensure controlled products are labeled or identified.
2. To obtain Material Safety Data Sheets (MSDS).
3. To educate workers.

WHMIS is a combination of Federal and Provincial legislation. The main purpose of Federal WHMIS legislation is to require suppliers of hazardous materials to provide health and safety information as a condition of sale. The main purpose of Provincial WHMIS legislation is to require employers to obtain health and safety information about hazardous materials in the work place and to pass this information on to workers.

There are two parts to identifying hazardous materials:

1. WHMIS label.
2. Material Safety Data Sheet (MSDS).

Exposure to hazardous substances may adversely affect health or cause injury. Employees must guard against skin contact, inhalation or ingestion of any potential harmful substance.

1. Where a hazardous substance or mixture is used or stored at a location, appropriate Material Safety Data Sheets (MSDS) shall be available at that location. Supervisors shall provide training to all workers on the hazards of any substances used or stored at a work place and conduct an annual review as deemed necessary.
2. All containers shall be clearly labeled in accordance with WHMIS regulations so they can be identified as to contents and potential hazards.
3. Appropriate personal protective equipment and other safety devices, as required shall be used.
4. All material shall be stored in safe well ventilated areas.
5. Appropriate handling procedures shall be used.
6. A chemical inventory shall be maintained in the workplace.
7. Emergency procedures shall be established.

WHMIS Label

Supplier Label



<p>SHIELD EYES EXPLOSIVE GASES CAN CAUSE BLINDNESS OR INJURY SE PROTÉGER LES YEUX LES GAZ EXPLOSIFS PEUVENT BLESSER OU RENDRE AVEUGLE</p>	<p>NO SPARKS FLAMES SMOKING</p> <p>ÉVITER LES ÉTINCELLES ET LES FLAMMES DÉFENSE DE FUMER</p>	<p><b>! DANGER/POISON</b></p> <p>SULFURIC ACID CAN CAUSE BLINDNESS OR SEVERE BURNS L'ACIDE SULFURIQUE PEUT CAUSER LA CÉCITÉ OU DES BRÛLURES GRAVES</p>	<p>FLUSH EYES IMMEDIATELY WITH WATER GET MEDICAL HELP FAST SE RINCER LES YEUX À L'EAU IMMÉDIATEMENT CONSULTER UN MÉDECIN RAPIDEMENT</p>
<p>KEEP OUT OF THE REACH OF CHILDREN.</p>		<p>TENIR HORS DE LA PORTÉE DES ENFANTS</p>	

You will find this label (or one similar to it) on all batteries that are filled with acid. It alerts you to the fact it is corrosive, poison and what to do in an emergency situation. As with any hazardous material, refer to the MSDS for additional information.

This certifies that Daniel Connors has completed the training required by the Transportation of Dangerous Goods (TDG) Regulations.

EMPLOYER John Ross + Sons Ltd.

EMPLOYER ADDRESS 171 CHAIN LAKE DR.  
Halifax, NS

ISSUED ON (DATE) June 22/4 EXPIRES ON June 22/7 (MAX 3 YEARS)

EMPLOYEE SIGNATURE \_\_\_\_\_ EMPLOYER SIGNATURE Daniel Connors

<b>Topics of Training - Self Teach Program</b> Responsibilities of Shipper, Handler, Carrier Hazards of Classes 1 to 9 Shipping Names and UN Numbers Shipping Documents Safety Marks Containers Special Situations Emergency Actions	<b>Additional Training (if any)</b> _____ _____ _____ <b>Restrictions (if any)</b> _____ _____ _____
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This certifies that Kerry Wilcox has completed the training required by the Transportation of Dangerous Goods (TDG) Regulations.

EMPLOYER John Ross + Sons Ltd.

EMPLOYER ADDRESS 171 CHAIN LAKE DR.  
Halifax Nova Scotia

ISSUED ON (DATE) June 22/4 EXPIRES ON June 24/7 (MAX 3 YEARS)

EMPLOYEE SIGNATURE \_\_\_\_\_ EMPLOYER SIGNATURE \_\_\_\_\_

<b>Topics of Training - Self Teach Program</b> Responsibilities of Shipper, Handler, Carrier Hazards of Classes 1 to 9 Shipping Names and UN Numbers Shipping Documents Safety Marks Containers Special Situations Emergency Actions	<b>Additional Training (if any)</b> _____ _____ _____ <b>Restrictions (if any)</b> _____ _____ _____
--	---

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This certifies that Shawna L. Gray  
has completed an on-line course in  
Workplace Hazardous Materials Information System

April 11, 2001

  
OHS Specialist

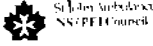
Jonathan Ross  
has completed a training session in the

Workplace Hazardous Materials Information System

Instructor: Chuck Douthwaite

Instructor #: 82289

Date: July 18, 2002



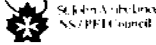
Patrick McKay  
has completed a training session in the

Workplace Hazardous Materials Information System

Instructor: Chuck Douthwaite

Instructor #: 82289

Date: July 18, 2002



David Gonzalez

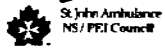
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Instructor #: 82289

Date: July 18/02



David Urgelles Cabado

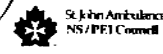
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Simon Strickland

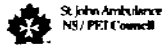
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Gordie Francis

has completed a training session in the

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Date: July 18/02



Joe Squires

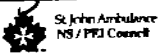
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Doug McGowan

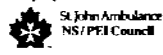
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Maile Williams

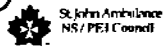
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Doug Conrad

has completed a training session in the

Workplace Hazardous Materials Information System

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Angie Hughes

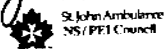
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Shawn Osmond

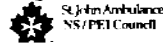
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Ray Greening

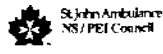
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Louis Haas

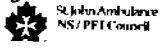
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Oliver Young

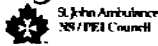
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Jacqueline Fralick

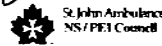
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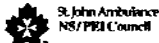
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Christine Collicutt

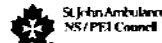
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Thomas Andrews

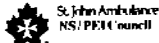
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Ramiro Hernandez

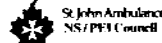
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Instructor #: 82289

Date: July 10/02



Stephen Stockhaus

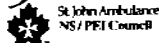
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Gene McKay

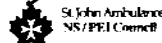
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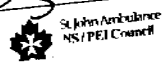
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Chris Connors

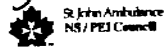
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Wayne Cameron

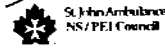
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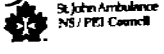
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Robert Kovacs

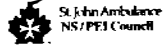
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Gosling

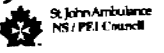
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Ethan Courley

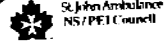
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Math McKay

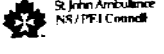
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Gerardo Morales

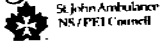
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Instructor: Chuck Douthwaite

Instructor #: 82289

Date: July 18/02



**METRO SAFETY SERVICES TRAINING CERTIFICATE**

This is to certify that : Nelson Vidito

Cert.# 19323

of : John Ross and Sons.

has been trained and successfully met the requirements for  
the: WORKPLACE HAZARDOUS MATERIALS  
INFORMATION SYSTEM (WHMIS)

Date : March 11, 1999 Signed R. D. Bowd

**METRO SAFETY SERVICES TRAINING CERTIFICATE**

This is to certify that : Gordie Francis

Cert.# 19325

of : John Ross and Sons.

has been trained and successfully met the requirements for  
the: WORKPLACE HAZARDOUS MATERIALS  
INFORMATION SYSTEM (WHMIS)

Date : March 11, 1999 Signed R. D. Bowd

**METRO SAFETY SERVICES TRAINING CERTIFICATE**

This is to certify that : David Cabado

Cert.# 19327

of : John Ross and Sons.

has been trained and successfully met the requirements for  
the: WORKPLACE HAZARDOUS MATERIALS  
INFORMATION SYSTEM (WHMIS)

Date : March 11, 1999 Signed R. D. Bowd

**METRO SAFETY SERVICES TRAINING CERTIFICATE**

This is to certify that : Sandra Murphy

Cert.# 19329

of : John Ross and Sons.

has been trained and successfully met the requirements for  
the: WORKPLACE HAZARDOUS MATERIALS  
INFORMATION SYSTEM (WHMIS)

Date : March 11, 1999 Signed R. D. Bowd

**METRO SAFETY SERVICES TRAINING CERTIFICATE**

This is to certify that : Doug Kline

Cert.# 19331

of : John Ross and Sons.

has been trained and successfully met the requirements for  
the: WORKPLACE HAZARDOUS MATERIALS  
INFORMATION SYSTEM (WHMIS)

Date : March 11, 1999 Signed R. D. Bowd

**METRO SAFETY SERVICES TRAINING CERTIFICATE**

This is to certify that : Derek Ross

Cert.# 19324

of : John Ross and Sons.

has been trained and successfully met the requirements for  
the: WORKPLACE HAZARDOUS MATERIALS  
INFORMATION SYSTEM (WHMIS)

Date : March 11, 1999 Signed R. D. Bowd

**METRO SAFETY SERVICES TRAINING CERTIFICATE**

This is to certify that : Douglas Conrad

Cert.# 19326

of : John Ross and Sons.

has been trained and successfully met the requirements for  
the: WORKPLACE HAZARDOUS MATERIALS  
INFORMATION SYSTEM (WHMIS)

Date : March 11, 1999 Signed R. D. Bowd

**METRO SAFETY SERVICES TRAINING CERTIFICATE**

This is to certify that : Julie Ibarra

Cert.# 19328

of : John Ross and Sons.

has been trained and successfully met the requirements for  
the: WORKPLACE HAZARDOUS MATERIALS  
INFORMATION SYSTEM (WHMIS)

Date : March 11, 1999 Signed R. D. Bowd

**METRO SAFETY SERVICES TRAINING CERTIFICATE**

This is to certify that : Douglas McGowan

Cert.# 19330

of : John Ross and Sons.

has been trained and successfully met the requirements for  
the: WORKPLACE HAZARDOUS MATERIALS  
INFORMATION SYSTEM (WHMIS)

Date : March 11, 1999 Signed R. D. Bowd

**METRO SAFETY SERVICES TRAINING CERTIFICATE**

This is to certify that : Carlos Gonzalez

Cert.# 19332

of : John Ross and Sons.

has been trained and successfully met the requirements for  
the: WORKPLACE HAZARDOUS MATERIALS  
INFORMATION SYSTEM (WHMIS)

Date : March 11, 1999 Signed R. D. Bowd



**METRO SAFETY SERVICES TRAINING CERTIFICATE**

This is to certify that : Scott Hobin

Cert.# 19333

of : John Ross and Sons.

has been trained and successfully met the requirements for  
the: WORKPLACE HAZARDOUS MATERIALS  
INFORMATION SYSTEM (WHMIS)

Date : March 11, 1999 Signed Rg. L. Baird

**METRO SAFETY SERVICES TRAINING CERTIFICATE**

This is to certify that : Donnie Oakley

Cert.# 19334

of : John Ross and Sons.

has been trained and successfully met the requirements for  
the: WORKPLACE HAZARDOUS MATERIALS  
INFORMATION SYSTEM (WHMIS)

Date : March 11, 1999 Signed Rg. L. Baird

**METRO SAFETY SERVICES TRAINING CERTIFICATE**

This is to certify that : Jyan Sanchez

Cert.# 19335

of : John Ross and Sons.

has been trained and successfully met the requirements for  
the: WORKPLACE HAZARDOUS MATERIALS  
INFORMATION SYSTEM (WHMIS)

Date : March 11, 1999 Signed Rg. L. Baird

**METRO SAFETY SERVICES TRAINING CERTIFICATE**

This is to certify that : Dean Hoskins

Cert.# 19336

of : John Ross and Sons.

has been trained and successfully met the requirements for  
the: WORKPLACE HAZARDOUS MATERIALS  
INFORMATION SYSTEM (WHMIS)

Date : March 11, 1999 Signed Rg. L. Baird

**METRO SAFETY SERVICES TRAINING CERTIFICATE**

This is to certify that : Richard Scallion

Cert.# 19337

of : John Ross and Sons.

has been trained and successfully met the requirements for  
the: WORKPLACE HAZARDOUS MATERIALS  
INFORMATION SYSTEM (WHMIS)

Date : March 11, 1999 Signed Rg. L. Baird

**METRO SAFETY SERVICES TRAINING CERTIFICATE**

This is to certify that : Shawn Osmond

Cert.# 19338

of : John Ross and Sons.

has been trained and successfully met the requirements for  
the: WORKPLACE HAZARDOUS MATERIALS  
INFORMATION SYSTEM (WHMIS)

Date : March 11, 1999 Signed Rg. L. Baird

**METRO SAFETY SERVICES TRAINING CERTIFICATE**

This is to certify that : Pat McKay

Cert.# 19323

of : John Ross and Sons.

has been trained and successfully met the requirements for  
the: WORKPLACE HAZARDOUS MATERIALS  
INFORMATION SYSTEM (WHMIS)

Date : March 11, 1999 Signed Rg. L. Baird

**METRO SAFETY SERVICES TRAINING CERTIFICATE**

This is to certify that : George Squires

Cert.# 19323

of : John Ross and Sons.

has been trained and successfully met the requirements for  
the: WORKPLACE HAZARDOUS MATERIALS  
INFORMATION SYSTEM (WHMIS)

Date : March 11, 1999 Signed Rg. L. Baird

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Date : March 11, 1999 Signed \_\_\_\_\_

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Date : March 11, 1999 Signed \_\_\_\_\_

**John Ross and Sons Limited**  
**171 Chain Lake Drive**  
**Halifax, NS**  
**B3S 1B3**

**Phone: 902-450-5233 Fax: 902-450-5084**

**SPILL REPORT**  
**COMPLETE THIS FORM AS SOON AS THE SPILL IS DISCOVERED**  
**FORWARD TO HEAD OFFICE**

PERSON DISCOVERING SPILL:	
TELEPHONE #:	
DATE:	TIME:
LOCATION:	
MATERIAL: TYPE	
MATERIAL: QUANTITY	
WEATHER CONDITIONS:	
WHAT CAUSED THE SPILL	
POLICE/FIRE DEPARTMENT CALLED	
SPILL CLEAN UP PROCEDURES INITIATED:	
OTHER COMMENTS/ACTIONS TAKEN:	
REPORT INITIATED BY:	DATE:
TITLE:	TEL:

## MATERIAL SAFETY DATA SHEET

I. PRODUCT IDENTIFICATION		
<b>MANUFACTURER</b> Exide Technologies 13000 Deerfield Parkway, Bldg. 200 Alpharetta, GA 30004	<b>CHEMICAL/TRADE NAME</b> (as used on label)	Lead-Acid Battery
<b>FOR INFORMATION</b> (610) 921-4052 Fred Ganster, Environmental, Safety & Health	<b>CHEMICAL FAMILY/ CLASSIFICATION</b>	Electric Storage Battery
<b>FOR EMERGENCY</b> CHEMTREC (800) 424-9300 24-hour Emergency Response Contact Ask for Environmental Coordinator	<b>DATE ISSUED:</b>	October 1, 2001 Page 1 of 5
		CHEMTREC INTERNATIONAL (703) 527-3887 – Collect

II. HAZARDOUS INGREDIENTS/IDENTITY INFORMATION					
		Approximate Air Exposure Limits (µg/m <sup>3</sup> )			
Components	CAS Number	% by Wt.	OSHA	ACGIH	NIOSH
<b>Inorganic compounds of:</b>					
Lead	7439-92-1	54-62	50	150	100
Antimony	7440-36-0	0.4	500	500	-
Tin	7440-31-5	0.16	2000	2000	-
Calcium	7440-70-2	0.02	-	-	-
Arsenic	7440-38-2	0.01	10	200	-
Electrolyte (sulfuric acid/water/solution)	7664-93-9	26-40	1000	1000	1000
<b>Case Material:</b>					
Polypropylene	9003-07-0	5-12	N/A	N/A	N/A
Hard Rubber	--				
<b>Plate separator material:</b>					
Polyethylene	9002-88-4	1-2	N/A	N/A	N/A

NOTE: Inorganic lead and electrolyte (water and sulfuric acid solution) are the primary components of every battery manufactured by Exide Technologies or its subsidiaries. Other ingredients may be present dependent upon battery type. Polypropylene is the principal case material of automotive and commercial batteries.

III. PHYSICAL DATA - ELECTROLYTE			
Boiling Point	203° F-240° F (for S.G. range)	Specific Gravity (H <sub>2</sub> O=1)	1.230 to 1.350
Melting Point	Not Applicable	Vapor Pressure (mm Hg) 77° F	17 to 11 (for S.G. range)
Solubility in Water	100%	Vapor Density (AIR=1)	Greater than 1
Evaporation Rate (Butyl acetate=1)	Less Than 1	% Volatiles by Weight	Not Applicable
Appearance and Odor	A clear liquid with a sharp, penetrating, pungent odor. A battery is a manufactured article; no apparent odor.		

IV. FIRE AND EXPLOSION HAZARD DATA	
Flash Point:	Not Applicable
Flammable Limits:	LEL = 4.1% (Hydrogen Gas in air); UEL = 74.2%
Extinguishing media:	CO <sub>2</sub> ; foam; dry chemical
<b>Special Fire Fighting Procedures:</b> Use positive pressure, self-contained breathing apparatus. Beware of acid splatter during water application and wear acid-resistant clothing, gloves, face and eye protection. If batteries are on charge, shut off power to the charging equipment, but, note that strings of series connected batteries may still pose risk of electric shock even when charging equipment is shut down.	

#### IV. FIRE AND EXPLOSION HAZARD DATA (CONTINUED)

**Unusual Fire and Explosion Hazards:** In operation, batteries generate and release flammable hydrogen gas. They must always be assumed to contain this gas which, if ignited by burning cigarette, naked flame or spark, may cause battery explosion with dispersion of casing fragments and corrosive liquid electrolyte. Carefully follow manufacturer's instructions for installation and service. Keep away all sources of gas ignition and do not allow metallic articles to simultaneously contact the negative and positive terminals of a battery.

#### V. REACTIVITY DATA

**Stability:** Stable  X   
Unstable    

**Conditions to Avoid:** Prolonged overcharge at high current; sources of ignition.

**Incompatibility:** (materials to avoid)

Electrolyte: Contact with combustibles and organic materials may cause fire and explosion. Also reacts violently with strong reducing agents, metals, sulfur trioxide gas, strong oxidizers, and water. Contact with metals may produce toxic sulfur dioxide fumes and may release flammable hydrogen gas.

Lead compounds: Avoid contact with strong acids, bases, halides, halogenates, potassium nitrate, permanganate, peroxides, nascent hydrogen, and reducing agents.

**Hazardous Decomposition Products:**

Electrolyte: Sulfur trioxide, carbon monoxide, sulfuric acid mist, sulfur dioxide, hydrogen sulfide.

Lead compounds: Temperatures above the melting point are likely to produce toxic metal fume, vapor, or dust; contact with strong acid or base or presence of nascent hydrogen may generate highly toxic arsine gas.

#### VI. HEALTH HAZARD DATA

**Routes of Entry:**

Electrolyte: Harmful by all routes of entry.

Lead compounds: Hazardous exposure can occur only when product is heated above the melting point, oxidized or otherwise processed or damaged to create dust, vapor, or fume.

**Inhalation:**

Electrolyte: Breathing of sulfuric acid vapors or mists may cause severe respiratory irritation.

Lead compounds: Inhalation of lead dust or fumes may cause irritation of upper respiratory tract and lungs.

**Ingestion:**

Electrolyte: May cause severe irritation of mouth, throat, esophagus, and stomach.

Lead compounds: Acute ingestion may cause abdominal pain, nausea, vomiting, diarrhea, and severe cramping. This may lead rapidly to systemic toxicity.

**Skin Contact:**

Electrolyte: Severe irritation, burns, and ulceration.

Lead compounds: Not absorbed through the skin.

**Eye Contact:**

Electrolyte: Severe irritation, burns, cornea damage, blindness.

Lead compounds: May cause eye irritation.

**Effects of Overexposure - Acute:**

Electrolyte: Severe skin irritation, damage to cornea may cause blindness, upper respiratory irritation.

Lead compounds: Symptoms of toxicity include headache, fatigue, abdominal pain, loss of appetite, muscular aches and weakness, sleep disturbances, and irritability.

**Effects of Overexposure - Chronic:**

Electrolyte: Possible erosion of tooth enamel; inflammation of nose, throat, and bronchial tubes.

## VI. HEALTH HAZARD DATA (CONTINUED)

Lead compounds: Anemia; neuropathy, particularly of the motor nerves, with wrist drop; kidney damage; reproductive changes in both males and females.

### Carcinogenicity:

Electrolyte: The National Toxicology Program (NTP) and the International Agency for Research on Cancer (IARC) have classified "strong inorganic acid mist containing sulfuric acid" as a substance that is carcinogenic to humans. This classification does not apply to sulfuric acid solutions in static liquid state or to electrolyte in batteries. Batteries subjected to abusive charging at excessively high currents for prolonged periods of time without vent caps in place may create a surrounding atmosphere of the offensive strong inorganic acid mist containing sulfuric acid.

Lead compounds: Listed as a 2B carcinogen, likely in animals at extreme doses. Proof of carcinogenicity in humans is lacking at present.

Arsenic: Listed by International Agency for Research on Cancer (IARC), OSHA and NIOSH as a carcinogen only after prolonged exposure at high levels.

### Medical Conditions Generally Aggravated by Exposure:

Overexposure to sulfuric acid mist may cause lung damage and aggravate pulmonary conditions. Contact of electrolyte (water and sulfuric acid solution) with skin may aggravate skin diseases such as eczema and contact dermatitis. Contact of electrolyte (water and sulfuric acid solution) with eyes may damage cornea and/or cause blindness. Lead and its compounds can aggravate some forms of kidney, liver, and neurologic diseases.

### Emergency and First Aid Procedures

**Inhalation:** Electrolyte: Remove to fresh air immediately. If breathing is difficult, give oxygen.

Lead compounds: Remove from exposure, gargle, wash nose and lips; consult physician.

**Ingestion:** Electrolyte: Give large quantities of water; **do not** induce vomiting; consult physician.

Lead compounds: Consult physician immediately.

**Skin:** Electrolyte: Flush with large amounts of water for at least 15 minutes; remove contaminated clothing completely, including shoes.

Lead compounds: Wash immediately with soap and water.

**Eyes:** Electrolyte and Lead compounds: Flush immediately with large amounts of water for at least 15 minutes; consult physician immediately.

## VII. PRECAUTIONS FOR SAFE HANDLING AND USE

### Handling and Storage:

Store batteries under roof in cool, dry, well-ventilated areas that are separated from incompatible materials and from activities that may create flames, spark, or heat. Store on smooth, impervious surfaces that are provided with measures for liquid containment in the event of electrolyte spills. Keep away from metallic objects that could bridge the terminals on a battery and create a dangerous short-circuit. Handle carefully and avoid tipping, which may allow electrolyte leakage. Single batteries pose no risk of electric shock but there may be increasing risk of electric shock from strings of connected batteries exceeding three 12-volt units.

### Charging:

There is a possible risk of electric shock from charging equipment and from strings of series connected batteries, whether or not being charged. Shut-off power to chargers whenever not in use and before detachment of any circuit connections. Batteries being charged will generate and release flammable hydrogen gas. Charging space should be ventilated. Keep battery vent caps in position. Prohibit smoking and avoid creation of flames and sparks nearby. Wear face and eye protection when near batteries being charged.

### Spill or Leak Procedures:

Stop flow of material, contain/absorb small spills with dry sand, earth, and vermiculite. Do not use combustible materials. If possible, carefully neutralize spilled electrolyte with soda ash, sodium bicarbonate, lime, etc. Wear acid-resistant clothing, boots, gloves, and face shield. **Do not allow discharge of un-neutralized acid to sewer.** Neutralized acid must be managed in accordance with approved local, state, and federal requirements. Consult state environmental agency and/or federal EPA.

### Waste Disposal Methods:

Spent batteries: Send to secondary lead smelter for recycling.

## VII. PRECAUTIONS FOR SAFE HANDLING AND USE (CONTINUED)

Electrolyte: Place neutralized slurry into sealed acid resistant containers and dispose of as hazardous waste, as applicable. Large water diluted spills, after neutralization and testing, should be managed in accordance with approved local, state, and federal requirements. Consult state environmental agency and/or federal EPA.

### Precautionary Labeling:

POISON - CAUSES SEVERE BURNS

CORROSIVE - CONTAINS SULFURIC ACID

DANGER - EXPLOSIVE GASES

KEEP AWAY FROM CHILDREN

## VIII. CONTROL MEASURES

### Engineering Controls and Work Practices:

Store and handle in well-ventilated area. If mechanical ventilation is used, components must be acid-resistant. Handle batteries cautiously, do not tip to avoid spills. Make certain vent caps are on securely. If battery case is damaged, avoid bodily contact with internal components. Wear protective clothing, eye and face protection, when filling, charging, or handling batteries.

### Respiratory Protection:

None required under normal conditions. When concentrations of sulfuric acid mist are known to exceed PEL, use NIOSH or MSHA-approved respiratory protection.

### Protective gloves:

Rubber or plastic acid-resistant gloves with elbow-length gauntlet.

### Eye Protection:

Chemical goggles or face shield.

### Other Protection:

Acid-resistant apron. Under severe exposure or emergency conditions, wear acid-resistant clothing, gloves, and boots.

### Emergency Flushing:

In areas where water and sulfuric acid solutions are handled in concentrations greater than 1%, emergency eyewash stations and showers should be provided, with unlimited water supply.

## IX. OTHER REGULATORY INFORMATION

### NFPA Hazard Rating for sulfuric acid:

Flammability (Red)	=	0
Health (Blue)	=	3
Reactivity (Yellow)	=	2

Sulfuric acid is water-reactive if concentrated.

**TRANSPORTATION:** Wet (filled with electrolyte) batteries are regulated by U.S. DOT as a hazardous material, as provided in 49 CFR 173.159

Proper Shipping Name:	Battery, wet, filled with acid
Hazard Class/Division:	8
ID Number:	UN2794
Packing Group:	III
Label Required:	Corrosive

**RCRA:** Spent lead-acid batteries are not regulated as hazardous waste when recycled. Spilled sulfuric acid is a characteristic hazardous waste: EPA hazardous waste number D002 (corrosivity).

### CERCLA (Superfund) and EPCRA:

- Reportable Quantity (RQ) for spilled 100% sulfuric acid under CERCLA (Superfund) and EPCRA (Emergency Planning and Community Right to Know Act) is **1,000 lbs**. State and local reportable quantities for spilled sulfuric acid may vary.
- Sulfuric acid is a listed "Extremely Hazardous Substance" under EPCRA, with a Threshold Planning Quantity (TPQ) of **1,000 lbs**.
- EPCRA Section 302 notification is required if **1,000 lbs** or more of sulfuric acid is present at one site. An average automotive/commercial battery contains approximately 5 lbs of sulfuric acid. Contact your Exide representative for additional information.
- EPCRA Section 312 Tier Two reporting is required for non-automotive batteries if sulfuric acid is present in quantities of **500 lbs** or more and/or if lead is present in quantities of **10,000 lbs** or more.

**IX. OTHER REGULATORY INFORMATION (CONTINUED)**

(e) **Supplier Notification:** This product contains toxic chemicals that may be reportable under EPCRA Section 313 Toxic Chemical Release Inventory (Form R) requirements. For a manufacturing facility under SIC codes 20 through 39, the following information is provided to enable you to complete the required reports:

<u>Toxic Chemical</u>	<u>CAS Number</u>	<u>Approximate % by Weight</u>
Lead	7439-92-1	54-62
✓ Sulfuric Acid/Water Solution	7664-93-9	26-40
*Antimony	7440-36-0	0.4
*Arsenic	7440-38-2	0.01

\*Not present in all battery types. Contact your Exide representative for additional information.

If you distribute this product to other manufacturers in SIC Codes 20 through 39, this information must be provided with the first shipment of each calendar year.

**Note:** The Section 313 supplier notification requirement does not apply to batteries that are "consumer products".

**CAA:**

Exide Technologies supports preventative actions concerning ozone depletion in the atmosphere due to emissions of CFC's and other ozone depleting chemicals (ODC's), defined by the USEPA as Class I substances. Pursuant to Section 611 of the Clean Air Act Amendments (CAAA) of 1990, finalized on January 19, 1993, Exide established a policy to eliminate the use of Class I ODC's prior to the May 15, 1993 deadline.

**TSCA:**

Ingredients in Exide's batteries are listed in the TSCA Registry as follows:

	<u>CAS NO.</u>	<u>TSCA Status</u>
Electrolyte: Sulfuric acid (H <sub>2</sub> SO <sub>4</sub> )	7664-93-9	Listed
Inorganic Lead Compound		
Lead (Pb)	7439-92-1	Listed
Lead Oxide (PbO)	1317-36-8	Listed
Lead Sulfate (PbSO <sub>4</sub> )	7446-14-2	Listed
Antimony (Sb)	7440-36-0	Listed
Arsenic (As)	7440-38-2	Listed
Calcium (Ca)	7440-70-2	Listed
Tin (Sn)	7440-31-5	Listed

**CANADIAN REGULATIONS:**

All chemical substances in this product are listed on the CEPA DSL/NDL or are exempt from list requirements.

**CALIFORNIA PROPOSITION 65:** "WARNING: This product contains lead, a chemical known to the State of California to cause cancer, or birth defects or other reproductive harm."

PREPARED BY: ENVIRONMENTAL, SAFETY AND HEALTH DEPARTMENT  
 EXIDE TECHNOLOGIES  
 13000 DEERFIELD PKWY., BLDG. 200  
 ALPHARETTA, GA 30004

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