

**Inventory of Chemical Use by  
Businesses, Industries and Organizations in the  
Miramichi River and Pictou Harbour Watersheds**

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## EXECUTIVE SUMMARY

In the summer of 1993, Environment Canada, Atlantic Region, carried out a mail-out survey of chemical use patterns of businesses, organizations and industries in and around the Miramichi River and Pictou Harbour watersheds. Of the 350 operations surveyed, 89 (25.4%) responded to the survey, 24% in the Miramichi region and 26.2% in the Pictou Region.

In the Miramichi, major organizations using or producing toxic and hazardous substances are the wood processing and forest product sector, and the mining sector, which use or produce chemicals including large quantities of metals (copper) and organics (benzene). One forest spray business (Forest Protection Ltd.) formulates on average 48,000 L/year of the pesticide fenitrothion for use province-wide, and stores it in the study area at Upper Blackville. Toluene and benzene are the most frequently used toxic components of products such as paint, primer, blanket wash and gasoline. The majority of solid wastes were wood wastes, produced by lumber companies, which are burned (as fuel). A small proportion of the solid wastes consisted of waste paper which was recycled while the remainder of solid wastes was sent to landfills. Liquid discharges are sent mainly to municipal sewage systems. Heath Steele Mines was the only operation to provide information on chemical concentrations in effluent, all results falling within the provincial guidelines.

In the Pictou Harbour watershed, the automotive sector was a major user of toxic and hazardous substances, using products such as paint, primer, reducer and thinners, which frequently contained significant amounts of toluene, benzene, xylene, lead, acetic acid and cyanide. Gasoline (which also contains toluene, benzene and xylene) is sold locally in large quantities (40,000 L/year and 45,000 L/year) by Sigi's Auto Service and Warren Maritimes Ltd. Solid wastes are either sent to landfills or removed by recycling companies, while liquid wastes are stored in tanks (to be recycled) or disposed of in municipal sewage systems. Michelin Tires (Canada) Limited and Scott Maritimes Ltd. were the only two companies that monitor effluent chemical concentrations.

## 1.0 INTRODUCTION

One of the initiatives of Canada's Green Plan was the Atlantic Hot Spots Program, designed to encourage communities and stakeholders in areas having significant pollution problems to take more responsibility for protection of their own environment. Since the release of Environment Canada's Green Plan, several stakeholder organizations have been established in 14 communities in Atlantic Canada. Their objectives include: documenting the potential sources of pollution; assessing environmental risks associated with the use of toxic substances; monitoring the quality of receiving waters; participating in the development of long-term environmental management and conservation initiatives; and promoting sustainable environmental stewardship through education and environmental awareness programs.

In support of these objectives, Environmental Protection, Conservation and Protection, Atlantic Region, initiated a study to provide an inventory of the chemical consumption patterns by businesses and industries located in the watersheds of the Miramichi River, New Brunswick, and Pictou Harbour, Nova Scotia. Both areas have been designated as program sites for the Atlantic Coastal Action Program (ACAP). Both are major population centres situated on estuaries; have long histories of settlement and industrial development; and as well have significant reliance on natural resources and tourist base. The Miramichi is renowned for natural attributes, particularly the fishery for Atlantic salmon, but other resources include minerals, forests, and, in the river mouth and adjacent Gulf of St. Lawrence, major finfish and shellfish fisheries. The river and tributaries, however, has been impacted by industrial developments such as pulp and paper operations, mining, major channel dredging projects and contamination and raw sewage from the population centres along the river. The Pictou Harbour watershed and the shores along the confluence of East, West and Middle Rivers, include one of the oldest areas of settlement in Nova Scotia as well as one of its major industrial centres. The harbour and river estuaries have been impacted by various industries including pulp and paper, factories, foundries, and ship-building as well as human sewage. Environmental quality in the Pictou Harbour watershed has been experiencing problems for upwards of a century, although only in the past thirty years have environmental concerns come to the forefront of public opinion and been dealt with.

The current survey included all businesses in each region and therefore provided an opportunity to view the chemical use patterns over a broad spectrum in each community. A subgroup of the business community included major industries and sectors, some of which manufacture and import chemicals, and so the survey could identify cases where large quantities of chemicals were used. In addition, by giving the businesses the opportunity to itemize their chemical use patterns, the survey could give a profile of chemicals of potential environmental concern that may be produced, imported, or consumed. Because a chemical could be utilized by different industries to perform varying process functions with varying potential for release to receiving environments, the study requested brief information on the intended end uses and/or process functions of each chemical consumed. Industrial solid and liquid wastes may be potential sources of environmental contamination; therefore the study sought to assess how businesses/industries disposed of solid waste and whether or not they maintained continuous or intermittent discharges that could contain chemicals and/or chemical by-products.

The data provides a basic tool in the chemical characterization of industrial effluent/discharges; identifies potential chemicals of concern; and identifies the industrial contribution to environmental quality of the watersheds.

## 2.0 METHODS

In early 1993, Environment Canada, Atlantic Region developed a survey and mailing list for all businesses and institutions in the Miramichi River and Pictou Harbour watersheds. Various sources for a contact list were consulted, including: telephone directory listings, Environment Canada databases (e.g. RIPS), lists provided by ACAP groups, industrial directories, and previous reports (e.g. MREAC 1992; Boyle 1990). The survey form requested information on: chemicals manufactured, imported, used or consumed; solid and liquid waste management practises; and treatment of liquid waste. Material Safety Data Sheets were requested for chemicals indicated. The respondents were given an opportunity to request that the data they supplied be considered proprietary.

An initial mailout resulted in a small number (5%) of returns. In September 1993, Envirosphere Consultants Limited was contracted to carry the survey and analysis to completion. All selected businesses and organizations were contacted by telephone and asked for reasons for lack of response and intent, if any, to respond to the survey. In general, the operations contacted showed minimal awareness of the survey, although some indicated they intended to respond. As a result of this poor response, Envirosphere decided to repeat the mailout with more intense follow-up by telephone. Subsequently surveys were mailed to all operations which had not already completed them. All operations were subsequently contacted at least once by telephone to encourage them to respond and to help them with questions or concerns.

A wide range of operations and chemicals were involved in the survey. Because of this broad focus, analysis was intended largely to highlight chemicals of concern and to present them for discussion. Toxic components of common products were identified (where Material Safety Data Sheets (MSDS) were available for the product, either supplied by the user or those available from Environment Canada), and used in determining the distribution of chemicals of concern and use patterns. The MSDS sheets did not give, however, adequate information in many cases (e.g. wide range of percent composition or percentage not provided).

## 3.0 MIRAMICHI WATERSHED

### 3.1 Overview

Several studies contain information on inventories of chemicals used and industrial effluent discharges in the Miramichi Region including: Miramichi River Environmental Assessment Committee (MREAC) Summary Report (1992); and The Miramichi River Industrial Point Source Report (NB Department of the Environment, Industrial Programs Branch) (1991). In addition, the MREAC is carrying out (as part of efforts to prepare a comprehensive environmental management plan for the Miramichi watershed) a survey of businesses which may provide additional information on chemical use patterns in the area.

### 3.2 Industry profile

Only thirty-four businesses or operations from the Miramichi region responded to the survey, a return rate of 24%. (Tables 1 & 2; Figure 1). Most of the organizations were in the following groups: wood processing and forestry (6); printing (3); automotive businesses including auto dealers, automotive service (truck and automobile), and gas stations (3); car wash and pressure cleaning (2); retail food and beverage (3); dry-cleaners and cleaning services (3) and sign making (2). The remaining businesses included: a major mining operation, a feed business, a veterinarian, a federal correctional facility, a peat moss supplier, a dairy, a golf course, and a boat building and repair operation. Four surveys were returned uncompleted.

Wood processing and forestry services represented the largest number of businesses, including: Alcell Technologies Inc., Forest Protection Limited, Ashley Colter (1961) Limited, Blackville Lumber, Reynolds Custom Lumber and Newcastle Lumber. Forest Protection Limited is involved in aerial spraying for forest insect control.

**Table 1. Survey coverage and response rate.**

Region	Miramichi	Pictou	Total
Sent	125	225	350
Returned Completed	30 (24.0%)	59 (26.2%)	89 (25.4%)
Returned uncompleted	4	17	21
<b>Survey Population</b>			
Food and Accommodation	3	1	4
Cleaning Services	3	4	7
Concrete and Asphalt	0	2	2
Dairy	1	1	2
Autobody	1	5	6
Printing	1	5	6
Auto Services	4	15	19
Medical Facilities	0	3	3
Forestry and Related Industries	6	1	7
Rinks	0	4	4
Municipal Administration & Education	0	7	7
Other	9	13	23
<b>TOTAL</b>	<b>30</b>	<b>59</b>	<b>89</b>

**Table 2. Business listing and classification of businesses surveyed in the Miramichi Region.**

**Food and Beverage**

Cassidy's Beverages Limited  
Goody Shop  
Taylor's Fish Market

**Feed Business**

Miramichi Feeds Inc.

**Dry Cleaners and Cleaning Services**

Laroche Carpet Cleaning  
Russell's Cleaners--Chatham  
Russell's Cleaners--Newcastle

**Printers**

Gemini Printing  
Miramichi Web Ltd  
Newcastle Printing Limited

**Sign Makers**

Blaircan Signs Limited  
Dickson Signs

**Autobody Shops**

Gerry's Auto Body

**Boat Repair**

JT Boat Building and Repairs

**Industrial Cleaners**

Fernrob Pressure Cleaning Systems (2)

**Automotive Services**

Miramichi City Auto  
Newcastle Spring and Truck  
Center  
Vautour's Ultramar



**Table 2. (cont). Business listing and classification of businesses surveyed in the Miramichi Region.**

**Dairy**

Northumberland Cooperative

**Wood Products and Forestry**

Alcell Developments Inc.  
Ashley Colter (1961) Limited  
Blackville Lumber Inc.  
Forest Protection Limited  
Newcastle Lumber Co. Inc  
Reynold's Custom Lumber Prod.  
Inc.

**Mining**

Heath Steele Mines

**Veterinarian**

Bushville Animal Clinic

**Federal Institution**

Correctional Services of  
Canada (Renous)

**Recreation**

Old Mill Pond Golf and  
Country Club

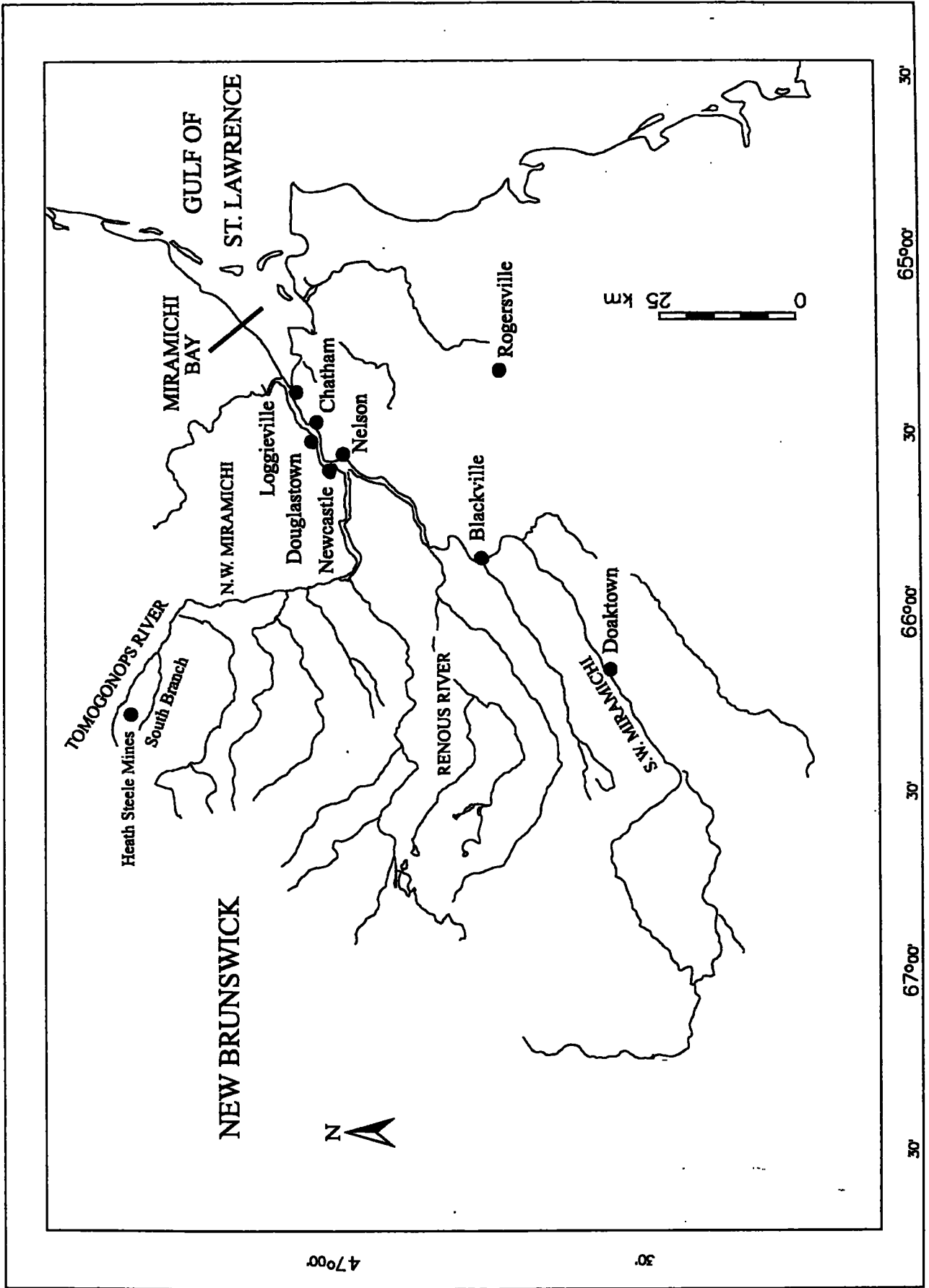


Figure 1. Miramichi River Watershed.

### 3.3 Chemical Consumption Inventory

Several of the businesses reported importing in 1991-92, products or chemicals which contain toxic, prohibited or restricted substances. Only three companies indicated that they manufacture, synthesize or formulate chemicals: Alcell Technologies Inc., Forest Protection Limited and Fernrob Pressure Cleaning Systems Limited (Table 3).

Five companies from the Miramichi region reported importing chemicals: Alcell Technologies Inc., Forest Protection Limited, Heath Steele Mines, Miramichi Web Limited and Russell's Cleaners (Table 4). For this discussion, "import" means "any product or chemical bought and shipped to the company from out of province".

Fifteen businesses from the Miramichi region responded to the section of the survey dealing with chemicals used. One hundred and twenty-six products were listed and only a small percentage were used by more than one business. A wide range of brand names were used, with a selection of products for similar functions. Chemicals used are presented in Table 5 and components in Appendix 1.

**Table 3. Products manufactured or formulated in Miramichi and Pictou Regions.**

Company	Product/Chemical	1991	1992
<b>Miramichi Region</b>			
Alcell Technologies Inc.	Wood Pulp	3,037 admt	807 admt
	Lignin	1,000 mt	253 mt
	Furfural	70 mt	21 mt
Fernrob Pressure Cleaning Systems	Hotsy Carbonate	1,000 L	2,500 L
	Hotsy Nytro	500 L	1,000 L
	Hotsy Carbochlor	205 L	410 L
	Hotsy Blue Thunder	205 L	205 L
Forest Protection Ltd.	Fenitrothion	*	*
<b>Pictou Region</b>			
Scott Maritimes Ltd.	Chlorine Dioxide Pulp	2,591 mt	4,027 mt
Warren Maritime Ltd.	Asphalt Concrete	228,545 mt	226,818 mt
		25,000 t	25,000 t

\* Forest Protection Limited formulates fenitrothion but does not manufacture it.

## Forestry and Wood Products

The wood processing and forest products sector made the largest contribution to total chemical use and requirements in the region. Alcell Technologies Inc., the research and development division of Miramichi Pulp and Paper Inc. (MPPI), has been developing the Alcell Process for the plant. In it, ethanol is added to

**Table 4. Chemicals imported into the Miramichi Region by businesses surveyed.**

Company	Product/Chemical	Quantity/year	
		1991	1992
Alcell Technologies Inc.	Sodium Hydroxide ([50%])	172,727 kg	46,364 kg
	Sulphuric Acid ([95%])	26,000 L	6,000 L
	Therminol 55	37,000 L	0 L
	Lube Oils and Varso1	820 L	205 L
	Biocide (Dearcide 717)	611 L	0 L
	Dispersant	1,000 kg	0 kg
	Ethanol (Grade 1-G)	1,243,000 L	399,000 L
Forest Protection Ltd.	Foray 48B	73,764 L	0 L
	Fenitrothion	58,667 L	37,880 L
	Foray 76B	0 L	16,275 L
	Dispel 64AF	20,133 L	0 L
	Futura XLV-H	85,017 L	61,600 L
Heath Steele Mines	Sodium Isopropyl Xanthate	35,000 kg	61,000 kg
	Soda Ash	3,767,000 kg	3,467,000 kg
Miramichi Web Ltd.	Printing Ink	3,276 L	2,730 L
	Wipe Out Blanket Cleaner	23 L	23 L
	Kodak PMT Activator	64 L	50 L
	Jarn Nutra-Web	137 L	137 L
	Rosos Acid	205 L	0 L
	Park Ultra I	182 L	159 L
Russell's Cleaners (Newcastle)	Petroleum Distillate 3135	4,000 L	3,800 L

hardwood chips to produce pulp, lignin, and furfural. Alcell produced 3,037 and 807 air dry metric tonnes (admt) of pulp, 1,000 and 253 metric tonnes (mt) of lignin, and 70 and 21 mt of furfural in 1991 and 1992 respectively. These quantities are for the prototype process and are smaller than would be produced annually in normal production at MPPI. The wood by-products, lignin and furfural, are burned as fuel, while the pulp is used in paper products.

**Table 5. Chemicals consumed in Miramichi Region in quantities greater than 10 kg or 10 L.**

Company	Product/Chemical	1991	1992
Alcell Technologies Inc.	Biocide (Dearcide 717)	611 L	<1 L
	Dispersant/Inhibitor (Poly-el-ph)	1000 kg	<1 kg
	Ethanol (Grade 1-G)	1243000 L	399000 L
	Lube Oils and Varso1	820 L	205 L
	Sodium Hydroxide ([50%])	190000 kg	51000 kg
	Sulphuric Acid ([95%])	26000 L	6000 L
	Therminol 55	37000 L	<1 L
Atlantic Institution	666 Safety Cleaner	60 kg	60 kg
	847	220 L	220 L
	Allbrite	2000 L	2000 L
	Aukem 125 Dry Sec	140 kg	140 kg
	Barquat MB-50 (Triple C598)	115 L	115 L
	Baygon Insecticide	115 L	<1 L
	Calcium Chloride	1000 kg	1000 kg
	Carwash Soap	120 L	120 L
	Dust Bane	270 L	270 L
	GH Wood Rug Shampoo	20 L	20 L
	Germicidal Multi Cleaner	20 L	20 L
	Grease Digester Liquid	<1 L	50 L
	Highway Salt	91000 kg	91000 kg
	Morpholine	150 L	150 L
	Potassium Permanganate	10 kg	10 kg
	Round Up	20 L	10 L
	Sada	<1 L	22 L
	Sodium Nitrate (Triple C570)	600 L	220 L
	Sodium Hypochlorite	300 L	300 L
	Sodium Sulphite	115 L	115 L
Super 8 Floor Finish	2000 L	2000 L	
Super High Speed Stripper	3000 L	3000 L	
Zep Flow	10 L	10 L	
Cassidy's Beverage Ltd.	AC-101 Alkaline Detergent	1229 L	1229 L
	Ferrous Sulfate Heptahydrate	10 bags	10 bags
	High Ca Hydrated Lime	20 bags	20 bags
	Klenz Glide PL	1638 L	1638 L
	Liquid Super Klenz	614 L	614 L
	Sodium hypochlorite	10 bags	10 bags
	Redi Kleen - Liquid	205 L	205 L
Fernrob Pressure Cleaning Systems	Film Gone	1505 L	1290 L
	Super L	205 L	205 L

Table 5 (cont). Chemicals consumed in Miramichi Region in quantities greater than 10 kg or 10 L.

Company	Product/Chemical	1991	1992
Forest Protection Ltd.	Dipel 64AF	20133 L	<1 L
	Fenitrothion	59797 L	43152 L
	Foray 48B	30679 L	42785 L
	Foray 76B	<1 L	16275 L
	Futura XLV-HP	85017 L	51600 L
Gemini Printing	AGFA 2-Developer	68 L	68 L
	AGFA 2-Fixer	68 L	68 L
	AZO FPC Finisher Preserver	6 L	12 L
	AZO ND-143 Negative Developer 2	<1 L	30 L
	Graph Star Starwash	80 L	40 L
	Kodak PMT Activator	18 L	36 L
	Kodak Ultratec Fixer	23 L	23 L
	Kodak Ultratec Tray Developer	68 L	113 L
Varsol	<1 L	40 L	
Gerry's Autobody	Dupont Hardener	68 L	91 L
	Dupont Paint	228 L	364 L
	Dupont Reducer	273 L	364 L
	Dupont Thinner	182 L	273 L
	Montana Wax & Grease Remover	137 L	182 L
Goody Shop	LSP 105 Detergent	44 L	44 L
	Quick Dry Rinse Additive	66 L	66 L
Heath Steele Mines	Activated Carbon	85000 kg	72000 kg
	Aerofloat B241	23000 kg	12000 kg
	Aeropromotor 5100	8000 kg	11000 kg
	B-Line	136 case	0 case
	Blasting Caps	375 case	800 case
	Copper Sulphate	705000 mt	721000 mt
	Dynamite	95 case	1367 case
	Lime, Calcine	15935000 kg	6834000 kg
	Lime, Hydrated	2400000 kg	1376000 kg
	Methyl Isobutylcarbinol	35000 kg	39000 kg
	Per Col 351	4000 kg	5000 kg
	Soda Ash	3767000 kg	3467000 kg
	Sodium Cyanide	21000 kg	23000 kg
	Sodium Silicate	<1 kg	1468000 kg
	Sulphur Dioxide	645000 kg	509000 kg
Tovex & Emulsions	490000 kg	366000 kg	
Wheat Dextrin (starch)	<1 kg	35000 kg	

Table 5 (cont). Chemicals consumed in Miramichi Region in quantities greater than 10 kg or 10 L.

Company	Product/Chemical	1991	1992
Newcastle Printing Ltd.	California Wash (Varn)	91 L	114 L
	Printing Ink	46 kg	57 kg
	Pronto (Varn)	46 L	68 L
	Silver Master Activator	48 L	52 L
	Silver Master Fountain	20 L	24 L
	Silver Master Stabilizer	32 L	36 L
	Superlene Fountain Solution	40 L	48 L
Northumberland Co-op Ltd.	Clorclean L.P.	36000 L	25200 L
	DFT-171 Sanitizer	4800 L	2400 L
	Exalt II Acid	9000 L	5400 L
	Liqua Terg	480 L	500 L
	MC-9	700 kg	800 kg
	Pennlube 300	12900 L	7360 L
	Steri-Gel	140 L	160 L
Old Mill Pond Golf and Country Club	Daconil 2787 Fungicide	40 L	30 L
	Par III Turf Herbicide	40 L	120 L
	Roural Green Turf Fungicide	*	20 L
	Tersan 1991 Turf Fungicide	10 kg	8 kg
	Turf Fertilizer 6-2-0	3200 kg	3600 kg
	Turf Fertilizer 20-5-10	300 kg	300 kg
	Weed + Feed Turf Fertilizer	1600 kg	1600 kg
Russell's Cleaners (Chatham)	Perchloroethylene	683 L	683 L
Russell's Cleaners (Newcastle)	Petroleum Distillate	4000 L	3800 L
	Dustbane Quano Plus	100 L	100 L
	Glass Cleaner	35 L	35 L

Few products were used by more than one company. Additional chemicals of concern included lubrication oils and sulphuric acid (95%), both imported by Alcell Technologies Inc. The latter was imported by Alcell in quantities of 26,000 L and 6,000 L in 1991 and 1992 respectively.

Forest Protection Limited formulates one product, the pesticide Fenitrothion. This chemical is used to control various insects but most commonly is used as an aerial spray in the control of the spruce budworm. This company has its head office in Fredericton, with chemical storage at the Dunphy Airstrip in Upper Blackville in the Miramichi watershed. The quantities of products listed, however, are for the province as a whole, and are not confined to the watershed of the Miramichi and its tributaries.

Several products or chemicals imported in 1991-92 contained substances which were: toxic, prohibited or restricted according to the Canadian Environmental Protection Act (CEPA); listed on the Priority Substances List under CEPA; or registered under the Pests Control Products Act, and used in large quantities. These included the pesticide fenitrothion, used by Forest Protection Limited (58,667 L (1991), 37,880 L (1992)), reflecting province-wide use, and the dry-cleaning solvent perchloroethylene used by Russell's Cleaners (4,000 L and 3,800 L in 1991 and 1992 respectively) (Table 4).

### **Cleaning Services**

Fernrob Pressure Cleaning Systems Inc. sells pressure systems and car wash equipment in addition to purchasing chemical and detergent concentrate from the Hotsy Corporation and formulating biodegradable cleaning products. Film Gon and Super L, both detergents, were used in significant amounts by Kwick'N EZ Car Wash (which is owned by Fernrob). Quantities of 1,505 L and 1290 L of Film Gon were consumed in 1991-92, and 205 L/year of Super L. Both products contain benzene (10-30%) and formaldehyde (0.1-1.0%).

### **Automotive Services**

Several of the products were used by more than one company and contained toxic or restricted chemicals. These included the Dupont line of paint, primer, reducer, and thinners. Gerry's Autobody used 228 L and 364 L of Dupont paint, 273 L and 364 L of reducer and 182 L and 273 L of thinner in 1991 and 1992 respectively. Dupont Hardener contains 7-13% acetic acid or about 10 L/year. These products may contain: cyanide (3-7%), lead (10-30%), tetrachloroisosolinone (1-5%), toluene (1-30%) and xylene (10-60%). Use of Dupont products totalled 751 L and 1,092 L in 1991 and 1992, respectively.

### **Printers**

Lead is a component of most printing ink, used by Miramichi Web Inc. and Newcastle Printing Limited, (no percentages provided), and blanket wash contains toluene (25-32%).

### **Mining**

Heath Steele Mines uses about 720 mt/year of copper sulfate and the Aerofloat+ 241 Promoter accounted for a significant quantity (approximately 15 mt/year of dicresyldithiophosphoric acid).

### **Dairy**

The Northumberland Co-op dairy uses between 700 kg and 800 kg of MC-9, which contains dichlorocyanurate. Other products used by Northumberland Co-op include: DFT-171 which contain 5% acetic acid (180 L/year), and 30% phosphoric acid (2,160 L/year); Exalt II ((contains 45% nitric acid (3,240 L/year)); and 30% phosphoric acid (741 L/year).



## **Additional Products and Industries**

Some of the other products, consumed by more than one business but which did not contain toxic or hazardous components, were A20-ND-143 Pak (developing of printing plates), calcium chloride (used in water systems), Exalt II (an industrial cleaner), Fountain Solution (pH buffer), Kodak PMT Activator (processing of photo chemical paper) and Varsol (paint and ink remover). MSDS sheets were not available for the latter products however.

Toluene and benzene occurred most frequently in products, both found in four products in the Miramichi Region, including blanket wash, gasoline, paint, primer, reducer and thinners. Benzene is a component of gasoline and powdered cleansers. Lead occurred in three products categorized as inks and paint.

### **3.4 Waste Inventory**

#### **Solid Waste Inventory and Disposal**

Twelve companies from the Miramichi provided information on solid waste disposal practices. Five of these (Alcell Technologies Inc., Blaircan Sign Limited, Miramichi Web Limited, Newcastle Printing and Taylor's Fish Market), sent 35,478 kg and 464,000 L of domestic waste to landfills in 1991 and 3,432 kg and 224,000 L in 1992. This domestic waste included scrap paper and general garbage, but no materials which were toxic or recyclable (Table 6).

Recycling companies such as Safety Kleen were contracted by Miramichi Web Limited, Newcastle Printing and Russell's Cleaners (two locations), to dispose of inks, textile cleaners and paper products. This method of disposal accounted for 3,000 kg and 456 L removed in 1991 and 28,364 kg of recyclables removed in 1992. Miramichi Web Limited did not use Safety Kleen in 1991, sending all materials to the landfill (and resulting in the elevated amount of recyclables listed for 1992).

Wood by-products produced by lumber and pulp mills (Alcell Technologies Inc., Ashley Colter (1961) Limited, Blackville Lumber Inc., Blaircan Signs Limited and Newcastle Lumber Company Limited), were the largest component of solid wastes reported, and the majority were burned. In 1991, 30,251,864 kg (and 5,504,795 L) and in 1992, 32,301,865 kg (and 5,963,528 L) of material was used as fuel for the power boiler at Miramichi Pulp and Paper Inc. Ashley Colter (1961) Limited sold 909,091 kg of excess wood for pressboard and Reynolds Custom Lumber sold 1,529,110 L of wood wastes to farmers. Blaircan Signs Limited gave 46 kg to people with wood stoves.

#### **Effluent Discharge Inventory**

Eleven companies in the Miramichi region provided information on liquid waste management. In general, the larger operations provided better information on liquid wastes, possibly because their operating approvals from the New Brunswick Department of the Environment require a certain level of effluent monitoring and compliance. Small businesses and operations having liquid wastes containing

harmful chemicals or chemical by-products are hard to control or monitor. Liquid wastes and sewage are easily dumped down the drain--out of sight out of mind (Table 7).

Typical disposal methods included: use of service companies to take liquid wastes away; on site storage prior to disposal or reuse; disposal into the wastewater stream; or burning (waste oil). Alcell Technologies Inc. and Russell's Cleaners (two locations) used a service company (Safety Kleen) to remove liquid wastes, which amounted to 1,912 L and 1,183 L of textile wastes, trace petroleum and lube oil for 1991-92. Several businesses indicated that they store chemicals on site to enable reuse or disposal in bulk. The Goody Shop (a candy store) stores vegetable shortening; Heath Steele Mines stores waste oil, dithiophosphate and potassium permanganate; while Miramichi Web Inc. and Newcastle Printing together stored 9,205 L and 9,224 L in 1991-92, respectively. Miramichi Web Inc. stores photochemicals (PMT Activator) and Newcastle Printing stores miscellaneous printing wastes. Other businesses likely store chemicals of various kinds but did not indicate this as a disposal method.

La Roche Carpet Cleaning, Northumberland Co-op Limited and Gemini Printing deal with various chemicals, including detergents and photochemicals, by diluting them with water and disposing of them in municipal sewage systems. These businesses accounted for 698,239 L of liquid waste in 1991 and 8,123,536 L in 1992. Some of the wastes included formaldehyde.

Waste oil was the most common liquid waste that companies deal with routinely. Alcell Technologies Inc., Ashley Colter (1961) Limited and Heath Steele Mines use waste lube and oil as fuel, either burning it in a boiler or smelter. In 1991 and 1992 respectively, 4,550 L and 42,460 L (a major increase) were disposed of in this manner. The only other liquid products which were significant were paint thinner and liquid wastes from printing shops.

### Liquid Effluent Management

Liquid effluents include process water, non-process wastewater, sewage, site drainage, overflow from lagoons or settling ponds, washwater, landfill leachate, cooling water discharge, storm water and mine water. Most business owners appear to have an understanding of where company discharges go, whether either directly into a body of water (untreated), to municipal sewage, or to a septic system (Table 8).

Nineteen operations provided information on the fate of liquid effluents. Alcell Technologies Inc. and Heath Steele Mines were major sources, having continuous discharges of 365,000 m<sup>3</sup>/year and between 1,577,000 and 5,256,000 m<sup>3</sup>/year, respectively. Alcell discharges effluent into the Northwest Miramichi River, while effluent from Heath Steele Mines enters the South Tomogonops River. The remaining businesses all had intermittent sewage and wastewater discharge (Table 8). Of the eleven businesses which reported discharge rates, most had either low rates or very high rates, the latter produced by the major industries (Figure 2).

Most of the companies discharge into municipal sewage systems and consequently the effluents receive some level of treatment. Six companies discharge into the

Table 6. Solid waste management in Miramichi Region.

Company	Product/Chemical	1991	1992	How Managed
Alcell Technologies Inc.	Lignin	829,091 Kg	148,182 Kg	burned in MP&P power boiler
	Bark and Wood	1240,909 Kg	335,455 Kg	burned
	General Garbage	464,000 L	224,000 L	MPPI landfill
Ashley Colter (1961) Ltd.	Bark, Sawdust and Shavings	909,091 Kg	909,091 Kg	sold for fuel and pressboard
Blackville Lumber Inc.	Bark, Sawdust and Shavings	28,181,818 Kg	31,818,182 Kg	MP&P for boiler fuel
Blaircan Signs Ltd.	General Garbage Shavings	23 Kg	23 Kg	local garbage
		46 Kg	46 Kg	give to people with woodstoves
Gemini Printing	Ink and Oil Soaked Rags	n.s.	n.s.	stored then burned
Miramichi Web Inc.	Discarded Newsprint and Ink	34,546 Kg	27,273 Kg	'91 landfill, '92 recycle
	Cardboard and Wooden Pallets	909 Kg	909 Kg	landfill
Newcastle Lumber Company	Bark/Sawdust	5,504,795 L	5,963,528 L	local pulp mills as fuel
Newcastle Printing Ltd	Paper	1,818 Kg	2,500 Kg	'91 recycle, '92 dump
Reynold's Custom Lumber	Bark/Sawdust	1,529,110 L	1,529,110 L	sold to farms as wood
Russell's Cleaners (Chatham)	Textile Cleaner	228 L	228 L	Picked up by Safety Kleen
	Wastes Removed from Cleaning	1,182 Kg	1,091 Kg	stored in special containers
Russell's Cleaners (Newcastle)	Textile Cleaner	228 L	228 L	Picked up by Safety Kleen
Taylor's Fish Market	Fish Heads	n.s.	n.s.	to the dump

Table 7. Liquid waste management in Miramichi Region.

Company	Product/Chemical	1991	1992	How Managed
Alcell Technologies Inc.	Waste Lube Oil	820 L	205 L	use waste oil recycler
	Contaminated Heat Transfer Oil	0 L	37000 L	used as boiler fuel
	Waste Motor Oil	4,550 L	5,460 L	used as boiler fuel
Ashley Colter (1961) Ltd.	Plate Developing	20 L	30 L	water diluted
	Fixing of Photo Paper	68 L	68 L	silver recovery system
	Developing of Photo Paper	68 L	68 L	water diluted
	Fixing of Graphic Negatives	91 L	91 L	silver recovery system
Gemini Printing	Developing of Graphic Negative	68 L	113 L	water diluted
	Liquid Vegetable Shortening	2,496 L	2,496 L	plastic containers to dump
Goody Shop	Waste Oil	3,300 L	3,300 L	stored in steel drum
	PCB Transformer Oil	0 unit	1 unit	one transformer, BNS smelter
	Dithiophosphates	220 L	220 L	stored in steel drum
	Potassium Permanganate	0 L	3,071 L	kept in drum pending disposal
Heath Steele Mines	Stain Remover	n.s.	n.s.	washed down drain
	Carpet Detergent	n.s.	n.s.	washed down drain
	Ban All Deodorizer	n.s.	n.s.	washed down drain
Miramichi Web Inc.	Kodak PMT Activator	27 L	23 L	kept on site pending disposal
	Waste from Printing Equipment	91 L	114 L	stored awaiting disposal means
Newcastle Printing Ltd.	Exalt II Acid	188,680 L	144,000 L	diluted with water
	Rinse at CIP	219,003 L	7,493,625 L	rinse at CIP cycles
	Sanitize Cycles	290,400 L	485,700 L	diluted to drain
Northumberland Co-op Ltd.	Waste Oil	50 L	70 L	stored in 45 kg drum
	Waste Fuel	5 L	5 L	stored in 45 kg drum
	Waste Solvent	5 L	5 L	stored in 45 kg drum
Old Mill Pond Golf and Country Club	Textile Waste	182 L	159 L	picked up by Safety Kleen
	Trace Petroleum	910 L	819 L	picked up by Safety Kleen
Russell's Cleaners (Chatham) (Newcastle)				

Table 8. Direct discharges and discharge rates in Miramichi Region.

Company	Centre	Type of Discharge	Receiving Water	Discharge Frequency	Discharge Rate
Alcell Technologies Inc.	Newcastle	domestic sewage	Northwest Miramichi	continuous	2,640 person hrs./week
	Newcastle	waste stream, uses MPP effluent treatment	Northwest Miramichi	continuous	365,000 m <sup>3</sup> /yr.
	Newcastle	storm drainage	Northwest Miramichi	intermittent	4,900 m <sup>3</sup> /yr.
Ashley Colter (1961) Ltd.	Fredericton	sewage & wastewater	Northwest Miramichi	intermittent	n.s.
	Fredericton	sewage & wastewater	Cess pools	intermittent	n.s.
Blackville Lumber Inc.	Baie Ste Anne	sewage & wastewater	Septic system	intermittent	n.s.
Cassidy's Beverages Ltd.	Chatham	sewage & wastewater	Chatham STP	intermittent	9.1 m <sup>3</sup> /yr.
Correctional Services Can	Renous	sewage & wastewater	Renous River	intermittent	170,000-250,000 m <sup>3</sup> /yr.
Gemini Printing	Chatham	sewage & wastewater	Chatham STP	intermittent	n.s.
Gerry's Autobody	Chatham	sewage & wastewater	Septic system	intermittent	n.s.
Heath Steele Mines	Newcastle	effluent	South Tomogonops	continuous	1,577-5,256 million m <sup>3</sup> /yr.
	Newcastle	site runoff, to collection ponds	South Tomogonops	intermittent	n.s.
JT Boat Building & Repair	Chatham	sewage & wastewater, no treatment	Miramichi River	intermittent	8.3 m <sup>3</sup> /yr.
Miramichi City Auto	Douglastown	sewage & wastewater	Douglastown STP	intermittent	minimal

Table 8 (cont). Direct discharges and discharge rates in Miramichi Region.

Company	Centre	Type of Discharge	Receiving Water	Discharge Frequency	Discharge Rate
Miramichi Web Inc.	Newcastle	sewage & wastewater	Newcastle STP	intermittent	0.1 m <sup>3</sup> /yr.
Newcastle Lumber Co. Inc.	Newcastle	sewage & wastewater	Newcastle STP	intermittent	n.s.
Newcastle Printing Ltd.	Newcastle	sewage & wastewater	Newcastle STP	intermittent	n.s.
Newcastle Spring+Truck	Newcastle	sewage & wastewater	Newcastle STP	intermittent	minimal
Northumberland Co-op Ltd.	Newcastle Newcastle	storm runoff sewage & wastewater	Miramichi River Newcastle STP	intermittent intermittent	n.s. 9,125 m <sup>3</sup> /yr.
Reynold's Custom Lumber	Chatham	sewage & wastewater	Septic system	intermittent	19.9 m <sup>3</sup> /yr.
Russell's Cleaners	Chatham	domestic sewage and washers	Chatham STP	intermittent	n.s.
Vautours Service Ltd.	Newcastle	sewage & wastewater	Chatham STP	intermittent	74.7 m <sup>3</sup> /yr.
	Newcastle	sewage & wastewater	Newcastle STP	intermittent	900 L/day

Newcastle municipal sewage system, four companies use the Chatham system and three discharge directly into the Northwest Miramichi River. Individual cases include the Atlantic Institution (Correctional Services Canada) which discharges to the Renous River; Miramichi City Auto uses the Douglastown system and Heath Steele Mines sends site runoff into the South Tomogonops River. Blackville Lumber, Gerry's Autobody and Reynold's Custom Lumber have septic systems.

Town engineers indicated the general feeling that sewage treatment plants are seriously outdated for the size of the community they were built to serve. The Newcastle Sewage treatment plant is not highly effective and about 40% of the total waste is sent directly into the Miramichi River. The untreated portion combined with the total discharge does not meet provincial objectives. The Douglastown system does, however, meet required treatment standards. It has been suggested that the plants should be examined and upgraded to enable them to handle present and future needs (Miramichi River Environmental Assessment Committee 1989-92).

Heath Steele Mines was the only company in the Miramichi watershed providing information on chemical composition of effluents. A number of chemicals of concern occur in the Heath Steele Mines effluent: arsenic, copper lead and zinc. Effluents are treated through pH control and settling ponds which bring the concentration of arsenic to < 0.004 mg/L, copper to < 0.01 mg/L, and lead and zinc to 0.010 mg/L, all of which were below (and therefore acceptable) under the Metal Mining Effluent Regulations under the Fisheries Act. The source of some of the metals from Heath Steele Mines is exposed pyritic waste (NBDOE 1991).

### Liquid Discharges--Miramichi Region 1991-1992

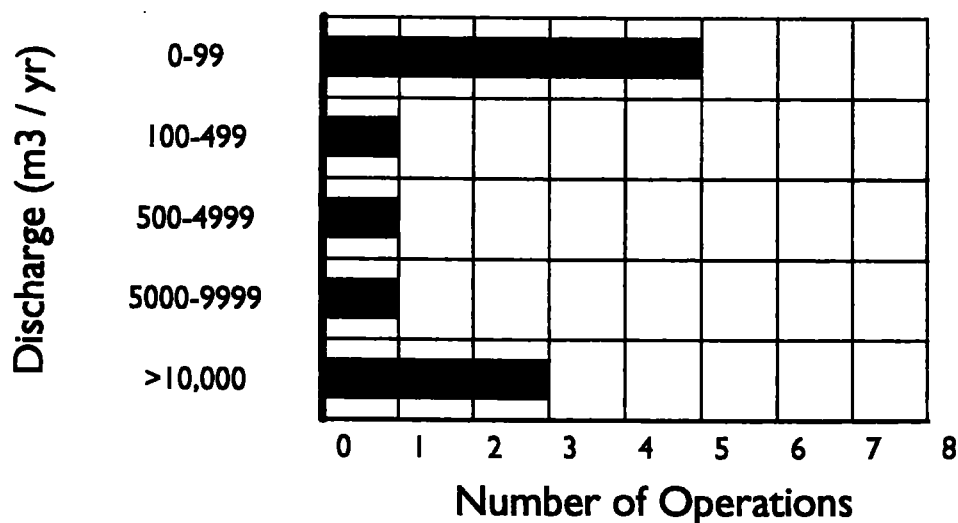


Figure 2. Liquid discharges from businesses/operations in the Miramichi Region which provided discharge information.

In the past, Heath Steele operation has resulted in increased levels of copper and zinc in the Little South Tomogonops River, resulting in raised concentrations in the Northwest Miramichi River. In 1972 (the last metal survey of the river, reported in MREAC 1992)) the combined levels of copper and zinc were high enough during certain months of the year to kill Atlantic salmon and other fish. Although MREAC (1992) reports that effluent from Heath Steele Mines can result in fish kills close to and below the mine, the conclusion appears to be due to the 1972 levels, but concentrations do not impact fish in the Miramichi River (MREAC 1989-1992).

#### **4.0 PICTOU HARBOUR WATERSHED**

##### **4.1 Overview**

Several studies contain information on inventories of chemicals used and industrial effluent discharges in the Pictou Region (Boyle (1990) and Day and Power (1986)). The study area is presented in Figure 3.

##### **4.2 Industry Profile**

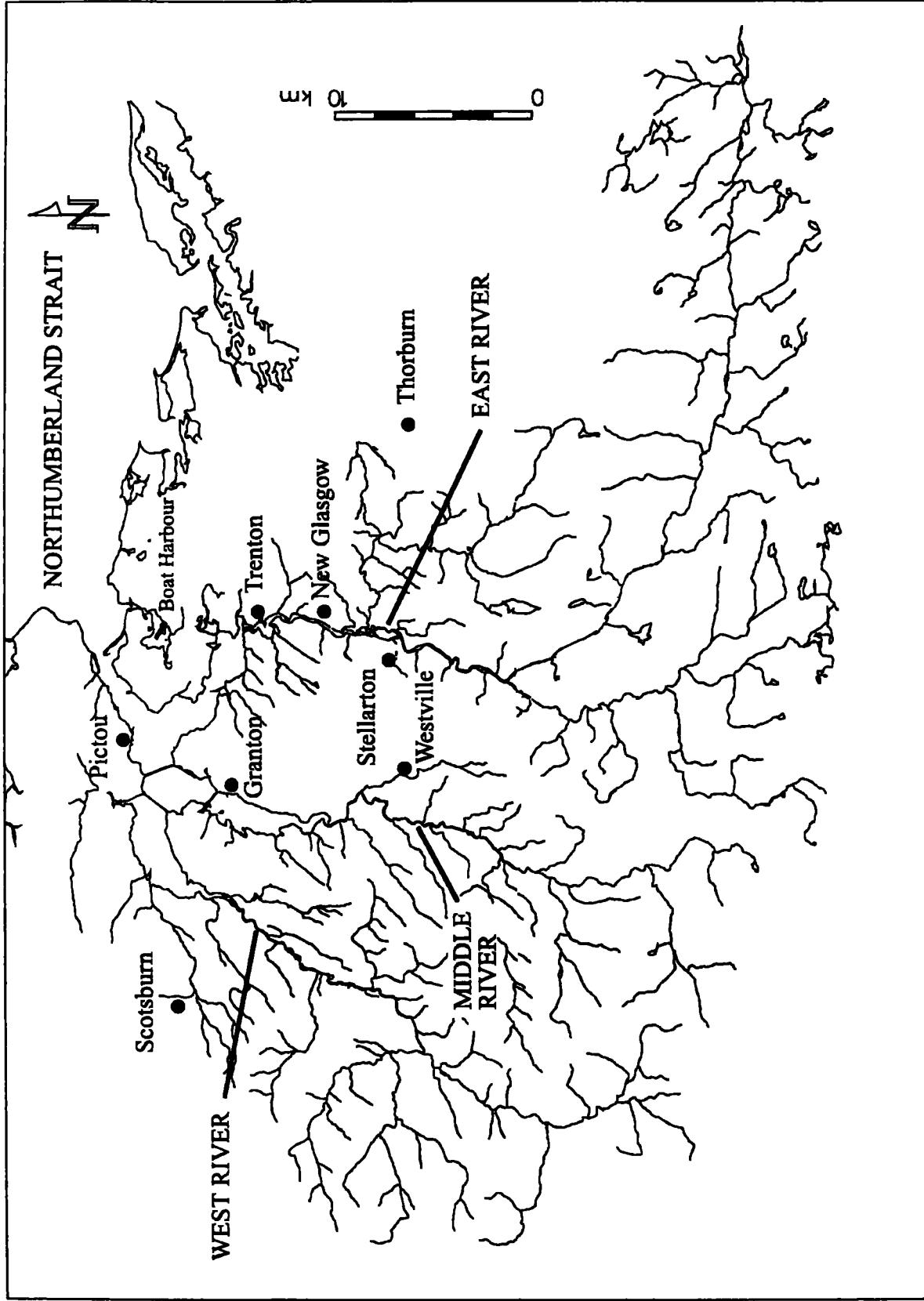
Seventy-six companies and businesses responded from the Pictou region, a return rate of 33.8%, including: autobody shops (5); printers (3); dry cleaners (4); automotive services including auto dealers (3) and automotive service (12); rinks (4); training facilities (4); medical facilities (3); propane dealers (2); private sewage companies (2); municipal administration (3); concrete and asphalt producers (2); and major industries (Scott Maritimes Limited and Michelin Tires). The remaining businesses included: a resort, a refrigeration firm, a bus company, a dairy, a car wash, a car salvage operation, an auto glass replacement company, a veterinary practise, a golf club, a distributor (Linmac Industrial) and an asbestos removal company. Seventeen surveys were returned uncompleted. Businesses are listed in Table 9. Response rate was similar to that for the surveys sent to the Miramichi region.

##### **4.3 Chemical Consumption Inventory**

Only two companies (Scott Maritimes Limited and Warren Maritime Limited) indicated that they manufacture, synthesize or formulate chemicals (Table 2). Ten companies reported that they imported (bought and shipped to the company from out of province) chemical products (Table 10), but the majority incorrectly responded to this section, as they were users of chemical products. These included: Abercrombie Animal Hospital, Anchor Motors Limited, Atlantic Speedy Propane, Kelderman Concrete Limited, Linmac Industrial (distributor only), Scott Maritimes Limited, Sigi's Auto Service, the Towns of New Glasgow and Stellarton and Warren Maritimes Limited (Table 11).

Chemical consumption by businesses overlaps chemicals listed as imported (above) and represents chemicals used regardless of location or origin. This table was completed most frequently by businesses from Pictou, having 41 operations which completed it. Four hundred and forty-seven products were





30'

45'

63°00'

Figure 3. Pictou Harbour Watershed.

45°30'

**Table 9. Business Directory and Classification of Businesses Surveyed in the Pictou Region.**

**Hospitality/Accommodations**

Pictou Lodge Resort

**Dry Cleaners**

A & R Laundromat  
Eastern Laundry Services  
Limited  
Quality Cleaners Ltd.  
Stuff 'N Fluff Laundromat

**Printers**

Advocate Printing & Publishing  
Alex MacDonald Printing  
Eastern Sign-Print Limited

**Autobody Shops**

Brad Royle's Autobody  
Forsythe Autobody  
John Palmer Auto Body  
Lloyd's Autobody  
Perry's Autobody

**Concrete Producers**

Kelderman Concrete Limited  
Warren Maritimes Limited

**Refrigeration Company**

Wayne's Refrigeration Co. Ltd

**Transportation**

Acadian Lines Limited

**Private Sewage Maintenance**

MacKenzie Septic Tank Service  
Pictou County Solid Waste Mgt.

**Table 9 (cont). Business Directory and Classification of Businesses Surveyed in the Pictou Region**

**Municipal Administration**

Pictou Waterfront Development Corp.  
Town of New Glasgow  
Town of Stellarton

**Dairy**

Scotsburn Dairy Group Limited

**Auto Dealers**

Alex MacDonald Motors  
Anchor Motors Limited  
Ceilidh Motors Ltd.

**Propane Distributers**

Atlantic Speedy Propane  
Limited  
Superior Propane Limited

**Automotive Services**

Beausejours Irving  
D. Corbett Rebuilding Ltd.  
Joe Arnold's Service Station  
K. Langille Auto Service  
Kevin's Service Centre  
MacCulloch Truck Services  
Limited  
Sid White's  
Automotive/Convenience  
Sigi's Auto Service  
Sponagle Transmission Shop  
T & W Auto Centre Limited  
V-Filling Station

**Car Wash**

Bob's E-Z Clean Car Wash

**Auto Salvage**

MacLean's Auto Salvage

**Glass Replacement**

Standard Auto Glass Limited

**Table 9 (cont). Business Directory and Classification of Businesses Surveyed in the Pictou Region**

**Education/Community Service**

Nova Scotia Community College  
Pictou District School Board  
Pictou Fisheries Training Pool  
Summer Street Industries

**Veterinarian**

Abercrombie Animal Hospital

**Medical**

Beaton's Dental Labs  
Pictou Medical Centre  
Sutherland Harris Memorial  
Hospital

**Rinks**

Bluenose Curling Club  
Hector Arena  
Ivor MacDonald Memorial Rink  
Trenton Community Rink

**Recreation**

Pictou Golf & Country Club

**Distributor**

Linmac Industrial Ltd.

**Asbestos Removal**

MacDonalds Industrial Services Ltd

**Manufacturers**

Michelin Tires (Canada)  
Scott Maritimes Ltd

listed with only a small percentage being used by more than one operation. A wide range of brands were listed, several different products for similar functions (Table 3, 10 & 11).

### **Concrete or Asphalt Products**

Concrete or asphalt producers consume significant amounts of various chemicals and materials. Kelderman Concrete Limited imported 120 L of Daratard 17 in 1992, 4,730 L and 4,802 L of WRDA-82 and 409 L and 244 L of Recover (ready mix concrete ingredients). Each of these products contains a small percentage (1%) of formaldehyde.

Warren Maritime Limited (an asphalt plant) uses a drying and heating aggregate that is combined with a liquid asphalt to produce approximately 25,000 mt/year of asphalt concrete used for paving and roofing (Table 3).

Gasoline, is a major toxic product imported in to the region in this sector. Primarily for resale, gas contains 10-30% toluene and xylene and 1-5% benzene. Warren Maritimes Limited (45,000 L/year) listed gas as an import.

### **Automotive Services**

The automotive sector included autobody shops and service stations. Several products were used by more than one company in the survey and contained toxic or restricted chemical components. The Dupont line of hardener, paint, primer, reducer and thinners were used by several autobody shops in the Pictou area (Brad Royle's Autobody, Forsythe Autobody, John Palmer Autobody and Perry's Autobody). These businesses in 1991-92 used 390 L of hardener (containing between 7-13% acetic acid); 2,730 L of paint ((containing cyanide (3-7%), lead (10-30%), tetrachloroisosolinone (1-5%), toluene (1-30%) and xylene (10-60%)); 926 L of primer containing 0.5-5% dibutyl phthalate and 10-30% toluene; 1,258 L of reducer and 1,986 L of thinner which both contain between 1% and 30% toluene. Brad Royle's Autobody also used 27 L/year of White Lightning, which is used to fill dents and scratches on cars and contains 60-100% 1,1,1-trichloroethane. Quantities of various toxic substances included in products used in the area, are found in Table 11 and Appendix 2.

Gasoline was a toxic substance listed by several operators. Gasoline contains benzene (1-5%), toluene and xylene (10-30% each). Operators which listed gasoline in the survey included: D. Corbett Rebuilders, Joe Arnold Service Station, MacLean's Auto Salvage, Sid White's Automotive, Sigi's Auto Service (40,000 L/year) and Sponagle Transmission Shop.

Ozone depleting materials such as CFC22 (freon) were used by the MacCulloch Truck Service at an average of 164 kg/year.

### **Printers**

Printing operations use various chemicals of significance. Inks containing lead are used by Advocate Printing and Publishing Limited, Alex MacDonald Printing and Eastern Sign-Print Limited. Overall, printing businesses used 1,895 L and 4,124

L of blanket wash <sup>1</sup>, which contains toluene (25-32%), and small amounts of developer which contains 54% formaldehyde. Fountain solution contains 4% hydroxyacetic acid, and the liquid fixers, deactivators and film adherents contain less than 5% acetic acid. Deletion fluids and KC 24 are made up of both fluoric and phosphoric acids.

Eastern Sign-Print Limited listed products containing toxic chemical components but didn't provide quantities consumed for 1991-92. The products (KP 27 deletion fluid, multilith electrostatic solution, ink readi, KC 24, machine ink, thinners, green filler, multipurpose inks, Super Kleen and Bronte Powder) contain collectively 1,1,1-trichloroethane, copper, cyanide, dichloromethane, dioctyl phthalate, fluoride, lead, perchloroethylene, toluene, xylene and zinc. Several printing companies have changed the chemicals used in the operation to water-based solutions and have installed silver recovery systems.

### **Cleaning Services**

Cleaning services include car washes and personal cleaning services. Film Gon and Super L used in the car washes contain benzene (10-30%) and formaldehyde (0.1-1.0%). Bob's EZ Clean Car Wash uses 1,638 L and 1,843 L of Film Gon and 228 L and 250 L of Super L.

Eastern Laundry Service and Quality Cleaners use erustricators (which remove rust from various materials) containing fluoride (10-40%). Quality Cleaners use the Liqua line of detergent cleaners; Sour Fer, Soft, Chlor, Suds and Alk which contain 15-40% hydrofluoric acid. Neither operation provided quantities consumed for 1991-92. Erusticator contains hydrofluoric acid.

### **Rinks, Refrigeration and Air Conditioning**

Ozone depleting materials such as CFC22 (freon) were used by rinks (Ivor MacDonald Arena and the Trenton Rink). A refrigeration business (Wayne's Refrigeration) reported usage of CFC12, CFC22 and CFC502 (Table 11).

### **Medical**

The Sutherland Harris Memorial Hospital use the Liqua line of detergent cleaners; Sour Fer, Soft, Chlor, Suds and Alk which contain 15-40% hydrofluoric acid. Sutherland Harris Hospital used relatively small quantities of these substances, from 6-10 L and 39.5 L in total. The hospital used approximately 190 L/year of Pink Orchid and 372 L and 331 L/year of Comet (both containing small percentages of benzene).

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<sup>1</sup> Eastern Sign-Print Limited is a Sobey's affiliate and is believed to be a major printing firm but failed to supply estimates of the volume of chemicals used.

Table 10. Chemicals imported into the Pictou Region by businesses surveyed.

Company	Product/Chemical	Quantity/year	
		1991	1992
Abercrombie Animal Hosp.	X-ray Developing	--	9 L
	Fixing Stains	--	9 L
Anchor Motors Ltd.	Oil, Gear Lube	5,500 L	6,000 L
Atlantic Speedy Propane	Propane	6,825,000 L	6,825,000 L
Kelderman Concrete Ltd.	Darex AEA	1,376 L	1,711 L
	Daratard 17	0 L	120 L
	WRDA	4,730 L	4,802 L
	Calcium Chloride	n.s.	n.s.
	WRDA 19	n.s.	n.s.
	Acid Concrete Cleaner Recover	204 L 409 L	204 L 244 L
Scott Maritimes Ltd.	Salt Cake	1,750,000 kg	577,273 kg
	Lime Rock	16,154,546 kg	8,518,182 kg
	Pebbled Lime	1,809,091 kg	850,000 kg
	Oxygen	2,181,818 kg	1,995,455 kg
	Caustic	11,677,273 kg	10,231,818 kg
	Chlorine	9,918,182 kg	8,345,455 kg
	Sodium Chlorate	5,359,091 kg	6,668,182 kg
	Sulphuric Acid	5,072,727 kg	4,604,546 kg
	Salt	2,695,455 kg	147,273 kg
	Hydrogen Peroxide	45,455 kg	68,182 kg
	Defoamer	409,091 kg	486,364 kg
	Talc	527,273 kg	622,727 kg
	Methanol	45,455 kg	622,727 kg
	Carbon Dioxide	45,455 kg	45,455 kg
Sigi's Auto Service	Oil	40,000 L	40,000 L
	Gasoline	40,000 L	40,000 L
Town of New Glasgow	Chlorine	5,455 kg	10,909 kg
	Hydrofluorosilic Acid	880 kg	12,480 kg
	Caustic Soda	20,000 kg	38,142 kg
	Sodium Fluoride, Granular	2,500 kg	0 kg
Town of Stellarton	Limestone Dust	21,818 kg	36,364 kg
	Polymer	455 kg	727 kg
	Sodium Hydroxide	9,091 kg	9,091 kg
	Chlorine	3,636 kg	3,636 kg
	Road Salt	1,745,455 kg	1,270,909 kg
	Ammonia	136 kg	0 kg
	Alum	27,273 kg	17,273 kg

**Table 10 (cont.). Chemicals imported into the Pictou Region by businesses surveyed.**

Company	Product/Chemical	Quantity/year	
		1991	1992
Warren Maritimes Ltd.	Gasoline	45,000 L	45,000 L
	Lube Oil	5,205 L	5,205 L
	Furnace Fuel	325,000 L	325,000 L
	Prestone Antifreeze	80 L	60 L
	Grease	50 kg	50 kg
	Liquid Asphalt	1,400 t	1,400 t
	Releez	205 L	205 L
	Engine Oil	205 L	205 L
	Diesel Fuel	400,000 L	400,000 L

### Education and Institutions

The Pictou District School Board uses approximately 100 L/year of 1,424 Bacteriostatic Dust, 138 L and 60 L/year of Bon Air Freshener, and 256 L and 2,480 L/year of Old Dutch Cleaner (1991 and 1992 respectively). Although these are generally innocuous, they contain potentially toxic components, including paradichlorobenzene and benzene. Benzene is a frequent component in powdered cleansers such as Comet, Old Dutch, Super L and Toilet Bowl cleaners. Most of these products are used commonly in the home, and most of the chemical is disposed down the drain.

### Pulp and Paper

Scott Maritimes, which produces kraft pulp at its plant at Abercrombie Point, produced 228,454 mt in 1991 and 226,818 mt in 1992. Scott was one of the two major chemical users in the area (Table 11).

### Dairy

The Scotsburn Dairy Group used 480 kg of MC-9 (powdered alkaline cleaner) in 1991 which contains dichlorocyanurate.

### Municipal Administration

The Town of New Glasgow imported a coarse granular sodium fluoride, 2,500 kg in 1991 (fluoride is currently a Priority Substance under CEPA).

### Industrial Distributor

Linmac Industrial distributed about 11 kg of LPS Chainmate which contains 50-60% of 1,1,1-trichloroethane (Table 11).



**Table 11. Chemicals consumed in the Pictou Region in quantities greater than 10 kg or 10 L.**

Company	Product/Chemical	Quantity/Year	
		1991	1992
Advocate Printing & Publishing	Blanket Wash	1,800 L	4,000 L
	Fountain Solution	1,200 L	3,000 L
	Ink	5,000 kg	40,000 kg
	Developer A	18 L	18 L
	Developer B	18 L	18 L
	Fountain Solution	28 L	52 L
	Ink-Black	14 kg	16 kg
	Kodak PMT Activator	8 L	11 L
	Plate Developer Wash	12 L	12 L
		95 L	124 L
Beaton's Dental Lab	Methyl Hydrate	14 L	14 L
Beausejours Irving	Chem Pro (Fresh Scent)	<1 L	55 L
	Chem Pro All Purpose Cleaner	40 L	40 L
	Diversey Superyl	60 L	60 L
	No Drip Oil Skin	150 L	150 L
	Sanifax Lift	46 L	46 L
Bluenose Curling Club	Calcium Chloride	2,000 kg	2,000 kg
Bob's EZ Clean Carwash	Auto Dri	137 L	137 L
	Film Gon	1,638 L	1,843 L
	Super L	228 L	250 L
Brad Royle's Autobody	Centari Paint	91 L	91 L
	Chrombase Paint	114 L	114 L
	Thinners	364 L	364 L
	Wash and Wipe	14 L	14 L
	White Lighting	27 L	27 L
Ceilidh Motors Ltd.	Brake Cleaner	185,640 L	185,640 L
	Carb Cleaner	185,640 L	185,640 L
	Polymer Coating Remover	23 L	23 L
	Varsol	205 L	205 L
Corbett Rebuilders Ltd.	Waste Oil	13,650 L	13,650 L
Forsyth Autobody	Dupont Hardeners	11 L	11 L
	Dupont Paint	455 L	455 L
	Dupont Primers	228 L	228 L
	Dupont Reducer	228 L	228 L
	Dupont Thinner	228 L	228 L

Table 11 (cont). Chemicals consumed in the Pictou Region in quantities greater than 10 kg or 10 L.

Company	Product/Chemical	Quantity/Year	
		1991	1992
Ivor MacDonald Arena	Freon 22	45 kg	45 kg
Joe Arnold Service	Fuel Oil	910 L	910 L
	Kerosene	202 L	202 L
John Palmer Autobody	Body Gold Plastic Filler	228 L	228 L
	Dupont 308 Primer	228 L	228 L
	Dupont 793 Hardener	11 L	11 L
	Dupont 8022 Reducer	228 L	228 L
	Dupont 8034 Thinner	228 L	228 L
	Dupont Acrylic Paint	455 L	455 L
Kelderman Concrete Ltd.	Acid Concrete Cleaner	204 L	204 L
	Daratard 17	<1 L	120 L
	Darex II AEA	1,376 L	1,711 L
	Recover	409 L	244 L
	WRDA-82	4,730 L	4,802 L
MacCulloch Truck Service	100 Premium 15W40	5,120 L	3,793 L
	AF-EP2	375 L	340 L
	Acetylene (3.6 m3 cylinder)	11 cyl	3 cyl
	Advant	<1 L	60 L
	Air Brake Antifreeze	132 L	172 L
	Air Brake Conditioner	120 L	<1 L
	Blue RTV Foam a Gasket	12 L	14 L
	Brake Fluid	176 L	101 L
	Break Cleaner	<1 L	64 L
	Carb Cleaner	24 kg	3 kg
	Diesel Coolant	6,368 L	3,304 L
	Everflow	288 L	166 L
	Freon 22	205 kg	123 kg
	Gas Line Antifreeze	12 L	<1 L
	HDH 80W90	2,572 L	1,504 L
	HDH85W140	40 L	<1 L
	HYDLP 58B	160 L	60 L
	Hyd 32B	2,400 L	2,740 L
	Hydraulic 100	220 L	100 L
	Hydraulic 32	84 L	164 L
	Hydraulic 46	<1 L	20 L
	Hydraulic 68	1,780 L	1,120 L
	IRSOL	340 L	500 L
Kerosene	<1 L	615 L	
Lubex EP2	330 L	451 L	

Table 11 (cont). Chemicals consumed in the Pictou Region in quantities greater than 10 kg or 10 L.

Company	Product/Chemical	Quantity/Year	
		1991	1992
MacCulloch Truck Services (cont)	Max-1 10W30	16 L	<1 L
	Methyl Hydrate (methanol)	336 L	352 L
	Poly EP-2	30 L	40 L
	Oxy 44 (6.8 m3 cylinder)	11 cyl	12 cyl
	Oxygen (9.2 m3 cylinder)	11 cyl	14 cyl
	Penetrating Oil	5 L	14 L
	Pin Brushing Grease	500 L	450 L
	Premixed Antifreeze	32 L	32 L
	Propane 20	<1 L	36 L
	Silicon Conditioner	85 L	43 L
	Spray 9	52 L	12 L
	Stalube Winter	16 L	<1 L
	Starting Fluid	36 L	<1 L
	Sulphuric Acid	40 L	<1 L
	Summer Vision Plus	128 L	32 L
	TR Hydraulic	<1 L	80 L
	Universal 10	200 L	140 L
	Universal 15W40	672 L	172 L
	Universal 20	40 L	36 L
	Universal 30	312 L	144 L
	Universal 40	<1 L	60 L
	Universal 50	80 L	<1 L
	Velco 1040	208 L	256 L
	Velco DexronII	916 L	604 L
	Velco HD30	16 L	<1 L
	Velco Triple 10	328 L	144 L
Windshield Wash	272 L	<1 L	
Winter Product	<1 L	6,044 L	
Winter Vision Plus	272 L	560 L	
IRSOL	91 L	91 L	
MacDonald Industrial Ltd	616-C	16 L	20 L
McLean's Auto Salvage	Engine Oil	96 L	80 L
Michelin Tires Ltd.	Alcohol Phenol Disulphide	3,900 kg	3,900 kg
	Aluminum	26,000 kg	26,000 kg
	Amine	44,200 kg	44,200 kg
	Amorphous Silica	286,000 kg	286,000 kg
	Aromatic Oil	1,768,000 kg*	1,768,000 kg*
	Butyl Rubber	2,704,000 kg*	2,704,000 kg*
	Carbon Black	14,300,000 kg*	14,300,000 kg*
Cast Iron/Steel	260,000 kg	260,000 kg	

\* converted to annual rate from daily rate using 260 working days/year.

Table 11 (cont). Chemicals consumed in the Pictou Region in quantities greater than 10 kg or 10 L.

Company	Product/Chemical	Quantity/Year	
		1991	1992
Michelin Tires (cont)	Caustic Soda	30680 kg	30680 kg
	Colbalt Resinate	390000 kg	390000 kg
	Dispersant	1820 kg	1820 kg
	Ester	36400 kg	36400 kg
	Guanidine	10400 kg	10400 kg
	Hypochlorate Solution	13780 kg	13780 kg
	Naphthenic Oil	189800 kg	189800 kg
	Natural Rubber	29900000 kg *	29900000 kg*
	Neoprene	5200 kg	5200 kg
	Neutralizing Amine	780 kg	780 kg
	Paraffinic Oil	15600 kg	15600 kg
	Petroleum Naptha	98800 kg	98800 kg
	Phenylendiamine	364000 kg	364000 kg
	Polyphosphate	5200 kg	5200 kg
	Polyphosphate Chloride	15600 kg	15600 kg
	Quinoline	52000 kg	52000 kg
	Resin	111800 kg	111800 kg
	Rubber Cement	169000 kg	169000 kg
	Softener	14820 kg	14820 kg
	Steric Acid	182000 kg	182000 kg
	Sulpher	72800 kg	72800 kg
	Sulphuric Acid	18200 kg	18200 kg
	Synthetic Rubber	14560000 kg *	14560000 kg*
	Talc	517400 kg	517400 kg
	Thiazole	3900 kg	3900 kg
	Thiuran	59800 kg	59800 kg
Wax	280800 kg	280800 kg	
Zinc	982800 kg *	982800 kg*	
Perry's Autobody	Acrylic and Urethane Paint	341 L	341 L
	Dupont Thinner, Reducer, Hard.	173 L	173 L
	Polyester Body Fillers	46 L	46 L
Pictou County Solid Waste Management	Poly Aluminum	<1 L	2000 L
Pictou District School Board	1995 Appearance Cleaner	79 L	64 L
	1996 Stripper	242 L	247 L
	1998 Sealer Finish	606 L	592 L
	779 Snapback	88 L	79 L
	909 Sweeping Compound	14 kg	15 kg
	A#707	100 L	97 L
	Ban-0	138 L	60 L

\* converted to annual rate from daily rate using 260 working days/year.

Table 11 (cont). Chemicals consumed in the Pictou Region in quantities greater than 10 kg or 10 L.

Company	Product/Chemical	Quantity/Year	
		1991	1992
Pictou District School Board (cont)	Bowl Cleaner	1557 L	1432 L
	Deodorant Block #16-122	109 L	86 L
	Deodorant Block #2-482	309 L	291 L
	Drain Cleaner	398 L	397 L
	Dust Absorb	102 L	97 L
	Fantastic Spray	154 L	57 L
	Furniture Polish	80 kg	72 kg
	Germicidal Detergent	20 L	22 L
	Javex	650 L	604 L
	Laundry Detergent	18 kg	5 kg
	Leminee 23	24 L	8 L
	Liquid Hand Soap	28 L	27 L
	Medallion Carpet Cleaner	10 L	6 L
	Old Dutch Cleaner	256 L	2480 L
	Pail of Powder	36 L	37 L
	Paint Thinner	164 L	91 L
	Pinetest	18 L	<1 L
	Resolve Wall Cleaner	20 L	17 L
	Sunlight Liquid	90 L	48 L
	U.H.S. Stripper	<1 L	17 L
Vinegar	210 L	197 L	
Window Cleaner	148 L	125 L	
Pictou Fisheries Training Pool	Calcium Chloride	90 kg	90 kg
	Dynakil	30 L	30 L
	GL13 Oxybrite	100 kg	100 kg
	Muriatic Acid	416 L	416 L
	Scrub Eze	256 L	256 L
	Sodium Hypochlorite	7790 L	7790 L
Super Sequa Sol	68 kg	68 kg	
Pictou Golf+Country Club	Daconil	50 L	50 L
	Fertilizer 20-20-20	60 kg	60 kg
	Fertilizer CIL 25-5-10	341 kg	341 kg
	Humate	125 kg	125 kg
	Killlex	45 L	45 L
	Milorganite	227 kg	227 kg
	Roval	<1 L	30 L
Pictou Waterfront Development Corporation	Pentox	200 L	200 L

Table 11 (cont). Chemicals consumed in the Pictou Region in quantities greater than 10 kg or 10 L.

Company	Product/Chemical	Quantity/Year	
		1991	1992
Scotsburn Dairy Group	Atochem AD-40	<1 kg	155 kg
	Atochem BK-BK	<1 kg	220 kg
	Atochem BioK	192 L	240 L
	Atochem MC-3	<1 kg	625 kg
	Atochem MC-9	580 kg	<1 kg
	Chloroclean Liquid Plus	21086 L	22463 L
	DFT-171	4515 L	4730 L
	Duo Kleen	<1 kg	200 kg
	Exalt II	3225 L	4300 L
	GQ-I	1075 L	4515 L
	Liqua Terg	1680 L	860 L
	Liquid Dry Kleen	1435 L	1640 L
	Monclean BK	<1 L	430 L
	PC 500	20 L	260 L
	Pennchem 91M	3100 kg	<1 kg
	Pennlube 300	3655 L	5260 L
	Sodium Hypochlorite Solution	40 L	140 L
	Stericide	120 L	80 L
	Sterifoam	120 L	80 L
	Sid White's Automotive	Gasoline	800000 L
Sponagle Transmission	Dextron	2457 L	2457 L
	Furnance Oil	6370 L	3640 L
	Safety Kleen	910 L	910 L
Standard Auto Glass	Urethane	338 L	338 L
	Varsol	60 L	60 L
Stuff'N Fluff	Liquid Bleach	1000 L	1000 L
	Non-Phosphate Detergent	900 kg	900 kg
Summer Street Ind.	Circa Paint and Varnish Strip	36 L	36 L
	Crew Super Blue Bowl Cleaner	10 L	10 L
	Pro Clear Finish Gloss	100 L	100 L
	Scrape Off Paint Remover	20 L	20 L
Superior Propane	Glidden Paint	455 L	455 L
	Methanol	410 L	410 L

Table 11 (cont). Chemicals consumed in the Pictou Region in quantities greater than 10 kg or 10 L.

Company	Product/Chemical	Quantity/Year	
		1991	1992
Sutherland Harris Memorial Hospital	A500 Dry Pellets	19 L	34 L
	Alax (Comet)	372 L	331 L
	Aura Machine Detergent	41 L	41 L
	BMD Enzyme Cleaner & Digestor	19 L	22 L
	Castle Tec Sanitizer	91 L	68 L
	Castle TechWash3 Detergent	137 L	137 L
	Christal 'X' Fixer/Replenisher	1026 L	950 L
	" 'R' Developer/Replenisher	988 L	1330 L
	Coldspor	109 L	109 L
	D-Scale	12 L	16 L
	Divophor	12 L	<1 L
	Grill Cleaner	15 L	12 L
	Hydropowder	380 L	460 L
	Ice-Off Pellets	1 bags	12 bags
	Javex	431 L	377 L
	Liqua Chlor	8 L	10 L
	Liquid Alkali	9 L	11 L
	Metrizyme Enzymatic Detergent	7 L	11 L
	Pink Orchid	200 L	180 L
	Quavo Plus	100 L	100 L
	Schedule 7 Chamber Cleanser	18 L	18 L
	Surgi Klean	120 L	116 L
	Torpedo Drain Cleaner	11 L	13 L
	Tub Cleanser	152 L	152 L
	Zero Spot	60 L	60 L
	Trenton Rink	Calcium Chloride	1818 kg
Warren Maritimes Ltd	Asphalt Concrete	25000 t	25000 t
	Diesel Fuel	400000 L	400000 L
	Engine Oil	205 L	205 L
	Furnace Oil	325000 L	325000 L
	Gasoline	45000 L	45000 L
	Grease	50 kg	50 kg
	Liquid Asphalt	1400 t	1400 t
	Lube Oil	5205 L	5205 L
	Prestone Antifreeze	80 L	60 L
Releez	205 L	205 L	
Wayne's Refrigeration	Freon 12	132 kg	190 kg
	Freon 22	58 kg	250 kg
	Freon 502	116 kg	58 kg
	Refrigeration Oil	16 L	16 L

## **Additional Products and Industries**

Toluene, benzene and lead occurred most commonly in products, including blanket wash, gasoline, paint, primer, reducer and thinners. Twelve products in the Pictou area contained benzene, found predominantly as a component of gasoline but also in powdered cleansers. Lead occurred in thirteen products, most commonly in ink and paint. Fluoride (nine products), and xylene and cyanide (seven products each), occurred next most frequently in products.

Companies rarely imported the same products, but in several cases duplication did occur. Lubrication oils were listed by both Anchor Motors Limited and Warren Maritimes Limited. Chlorine was imported as a component of other products in businesses such as Kelderman Concrete Limited and Scott Maritimes Limited, as well as the Town of New Glasgow, where it is used in water treatment. As indicated, gasoline was imported by various operators, chiefly service stations.

Acids are corrosive chemicals which can cause significant damage to the environment if spilled or released. Both 95% sulfuric acid (Scott Maritimes Limited) and hydrofluorsilic acid used in the Town of New Glasgow water supply, were imported in 1991-1992.

Some of the other products that more than one business consumed but which didn't contain toxic or restricted components were A20-ND-143 Pak (developing of photo plates), calcium chloride, Clean and Lube, Exalt II, Fountain Solution, IRSOL (cleaner), Javex (bleach), Kerosene, Kodak PMT Activator, Quavo Plus (floor cleaner) and Varsoi (paint and ink remover).

### **4.4 Waste Inventory**

#### **Solid Waste Inventory and Disposal**

In the Pictou region sixteen companies provided information on solid waste management. In general, the solid waste options were either use of a landfill, or disposal by recycling and removal companies. The companies using the landfill option (Abercrombie Animal Hospital, Beaton's Dental Lab, Bluenose Curling Club, Brad Royle's Autobody, T&W Auto Center Limited, Advocate Printing and Publishing, Eastern Sign-Print Limited, Michelin Tires and Scott Maritimes Limited) produced 9,733,885 kg (and 6,000,018 L) in 1991, and 10,462,067 kg in 1992. The domestic waste included scrap paper and general garbage, but nothing stated as toxic or recyclable (Table 12).

Recycling and removal companies such as Safety Kleen were contracted by several businesses (Acadia Lines Limited, Anchor Motors Limited and Scott Maritimes Limited), to dispose of inks, textile cleaners and paper products. The quantities removed and recycled for 1991 and 1992 were 200,755 kg and 937,573 kg, respectively. The quantity of recycled material more than doubled from 1991 to 1992.

Scott Maritimes Limited disposed of 36,100,000 L of carbon, sand, gravel and woodstuffs on site, for both 1991-92. Alex MacDonald Printing returned 114 kg/year of used film and developing plates to the manufacturer. Kelderman Concrete Limited and the Town of Stellarton treat 76,456 L/year of returned concrete (treated in settling ponds) and sludge (181,818 kg/year) respectively.



Table 12. Solid waste management in Pictou Region.

Company	Product/Chemical	1991	1992	How Managed
Abercrombie Animal Hospital	Domestic Wastes	n.s.	n.s.	garbage collection
Acadian Lines Ltd.	Waste Paper, Ink	500 bags	500 bags	removed by contractor
Advocate Printing & Publishing	Scrap Paper Used Plates	181,818 kg 68 kg	909,091 kg 68 kg	landfill and recycle returned to manufacturer
Alex MacDonald Printing	Used Film	46 kg	46 kg	returned to manufacturer
Anchor Motors	Paper, Oil Filters	300 kg	300 kg	Pictou District Planning Comm.
Beaton's Dental Labs	Excess plastic	11 kg	11 kg	landfill
Bluenose Curling Club	Domestic	n.s.	n.s.	landfill
Brad Royle's Autobody	Autobody fillers (dust)	18 L	18 L	landfill
Eastern Sign-Print Ltd.	Paper Corrugated paper	1,818 kg 455 kg	2,727 kg 909 kg	landfill recycler in Almans
Kelderman Concrete Ltd.	Unused concrete	76,456 L	76,456 L	5% goes to settling pond
MacCulloch Truck Services	Dead batteries	150 unit	150 unit	picked up by supplier

Table 12 (cont). Solid waste management in Pictou Region.

Company	Product/Chemical	1991	1992	How Managed
Michelin Tires (Canada)	Aluminum hydroxide	67000 kg	67000 kg	municipal landfill
	Asbestos	520 kg	520 kg	municipal landfill
	Domestic Garbage	8580000 kg	8580000 kg	municipal landfill
	Rubber	390000 kg	390000 kg	municipal landfill
	Rubber Reinforcing	130000 kg	130000 kg	municipal landfill
	Talc	130000 kg	130000 kg	municipal landfill
	Tires	218400 kg	218400 kg	municipal landfill
	Zinc Sterate	6500 kg	6500 kg	municipal landfill
	Polyaluminum Sludge	26000 kg	26000 kg	municipal landfill
Scott Maritimes Ltd.	Domestic Garbage	6000000 L	6000000 L	landfill
	Paper	18182 kg	27273 kg	recycle
	Carbon, CaCO <sub>3</sub>	3300000 L	3300000 L	dispose on site
	Carbon, Sand Gravel	17500000 L	17500000 L	dispose on site
	Wood Processing	15300000 L	15300000 L	dispose on site
T&W Auto Centre Ltd.	General Garbage	1818 kg	1818 kg	landfill
Town of Stellarton	Sludge	181818 kg	181818 kg	Erpas Sewage Treatment
Warren Maritimes Ltd.	Aggregate dust	300 t	300 t	spread out and revegetates

## Effluent Discharge Inventory

Twenty-nine businesses from Pictou provided information on liquid waste management (Table 13). Options available to businesses are: storage in tanks, contract removal, use as fuel, recycling, or disposal into municipal sewage. Fifteen companies in the area<sup>2</sup>, had liquid waste removed by a service company. Two contractors (Safety Kleen and Inland Oil) services were used to dispose of waste oil, paint thinners and ink. In 1991, 44,106 L and 182 kg of waste was picked up, about the same as in 1992 (45,006 L).

Several businesses or organizations store liquid wastes to enable materials to be reused or disposed of in bulk. Several automotive businesses (Anchor Motors Limited, Beausejourns Irving, D. Corkett Rebuilding Limited, Langille Auto Service, MacLean's Auto Salvage and Sponagle Transmission Shop), a refrigeration company (Wayne's Refrigeration), printers (Alex MacDonald Printing and Eastern Sign-Print) and the Pictou District School Board, indicated that they stored materials on site, amounting to 23,474 L and 21 kg for 1991, and about the same amount (24,097 L) for 1992.

Some waste engine oil was burned as a means of disposal by various operations. Pictou Golf and Country Club, Sigi's Auto Service, Alex MacDonald Motors Limited and MacCulloch Truck Service, burned collectively 16,260 L/year.

Pictou District School Board was the only organization reporting disposal at a municipal dumpsite, depositing 46 L/year of thinners.

Three businesses, Acadian Lines Limited, Eastern Sign-Print and Kelderman Concrete Limited indicated disposal of 7,688 L and 8,015 L of chemicals and their by-products (suitably diluted) with wastewaters in 1991-92.

Overall, waste oil was the most common liquid waste, followed by paint thinner, and liquid wastes from printing shops which use chemicals having toxic constituents.

Liquid discharges include process water, non-process wastewater, sewage, site drainage, overflow from lagoons or settling ponds, washwater, landfill leachate, cooling water discharge, storm water and mine water. Representatives of most organizations appear to have an understanding of where company discharges go, whether either directly into a body of water (untreated), to municipal sewage, or to a septic system. Most of the businesses, however, could not supply even an approximate figure for what their waste discharges were (Table 14). Of the 13 businesses of 36 (35%) that reported discharges, the majority released between 100 to 499 m<sup>3</sup>/yr (Figure 4).

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<sup>2</sup> Brad Royle's Autobody, Ceilidh Motors Limited, Kevin's Service Center, N.S. Community College, Perry's Autobody, Quality Cleaners, Sid White's Automotive, Sponagle Transmission Shop, T&W Auto Center, the Town of Stellarton, Advocate Printing and Publishing Limited, Scott Maritimes, Joe Arnold's Service Station, MacCulloch Truck Service and Warren Maritime Limited.

Table 13. Liquid waste management in Pictou Region.

Company	Product/Chemical	1991	1992	How Managed
Acadian Lines Ltd.	Quavo Plus Detergent	6750 L	6750 L	drain
Advocate Printing and Publishing	Waste Ink	400 L	800 L	MacDougall's Liquid Wastes
Alex Macdonald Motors	Waste Oil	2275 L	2275 L	burnt in furnace
Alex Macdonald Printing	Spent Fixer, Silver Nitrate	18 L	18 L	plastic lined barrels
Anchor Motors Ltd.	Waste Oil	5500 L	6000 L	stored in Above Tanks
Beausejourns Irving	Waste Oil	1365 L	1364 L	stored in Tanks
Brad Royle's Autobody	Paints, Thinner, Primer	364 L	364 L	Safety Kleen takes away
Ceillidh Motors Ltd.	Waste Oil	5460 L	5460 L	Island oil takes away
D. Corbett Rebuilding	Waste Oil	13650 L	13650 L	stored in tanks
Eastern Sign-Print Ltd.	1E Kodak Ultra Tec	683 L	910 L	dilute with water into sewage
	Kodak Activator (SII)	68 L	91 L	dilute with water into sewage
	Kodak SII Deactivator	91 L	137 L	dilute with water into sewage
	Waste Solvent	273 L	410 L	held and shipped to Quebec
	PMT Activator	96 L	127 L	dilute with water into sewage
Joe Arnold Service	Waste Oil and Grease	910 L	910 L	Inland tank stored
K. Langille Auto Service	Waste Oil	400 L	400 L	stored in tanks
Kelderman Concrete Ltd.	Washout Water and concrete	0 kg	0 kg	dumped in settling pond
Kevin's Service Centre	Waste Oil	1138 L	1138 L	Inland Oil takes

Table 13 (cont.). Liquid waste management in Pictou Region.

Company	Product/Chemical	1991	1992	How Managed
MacCulloch Truck Service	Antifreeze	3375 L	3375 L	stored and recycled
	Freon	182 kg	117 kg	recover and recycled
	Waste Oil	13500 L	13500 L	burnt in furnace
Maclean's Auto Salvage	Waste Oil	91 L	64 L	stored in containers on site
	Transmission Fluid	23 L	36 L	stored in containers on site
N.S. Community College	Waste Oil	1000 L	1000 L	Inland Oil takes
Perry's Autobody	Paint Thinner	228 L	228 L	waste disposal company takes
Pictou District School Board	Thinners	46 L	46 L	dumpsites
	Waste Oil	1800 L	1845 L	undercoating buses
	Hydra Clean Fluid	20 L	20 L	Safety Kleen takes away
	Motor Oil	10 drum	10 drum	underground tank
Pictou Golf+Country Club	Waste Oil	30 L	30 L	used to burn brush
Quality Cleaners Ltd.	Still Bottoms	2457 L	2457 L	Safety Clean Service
Scott Maritimes Ltd.	Waste Hydraulic Oil	18200 L	18200 L	stored and removed
	Spent Paint, Thinner	410 L	410 L	stored and removed
Sid White's Automotive	Waste Oil	455 L	910 L	Inland Oil takes
Sigi's Auto Service	Waste Oil	455 L	455 L	burnt
Spongale Transmission	Naphtha Petro Cleaner	910 L	910 L	tanks picked up and replaced
	Waste Transmission	2457 L	2457 L	Inland Oil takes
T&W Auto Centre Ltd.	Waste Oil	228 L	228 L	recycler removes
Town of Stellarton	Waste Oil	182 L	182 L	removed by contractor

Table 13 (cont.). Liquid waste management in Pictou Region.

Company	Product/Chemical	1991	1992	How Managed
Warren Maritimes Ltd.	Waste Oil	5205 L	5205 L	stored--removed by recycler
	Prestone Antifreeze	45 L	45 L	"
Wayne's Refrigeration Co.	Refrigeration Freon 502	16 L 5 kg	16 L 5 kg	stored--reused, reclaimed and stored
	Freon 22	2 kg	2 kg	"
	Freon 12	14 kg	14 kg	"

Thirty-seven operations from the Pictou region provided information on liquid discharges. Most discharges were intermittent while three (Michelin Tires, Scott Maritimes, and Scotsburn Dairy) produced continuous discharges. Michelin Tires discharges 580.4 million m<sup>3</sup>/year into the Middle River Reservoir; and Scott Maritimes Limited discharges between 30.5 - 36.1 million m<sup>3</sup>/year of wastewater (including some sewage) into Boat Harbour. Scotsburn Dairy did not indicate a rate of discharge for sewage and wastewater entering the East River sewage system, but dairies typically discharge large volumes of wastewater used in cleaning processes. A comparable dairy (Northumberland Co-Op) is covered in the Miramichi section of this report.

Most operations produce sewage and wastewater discharges, fourteen reporting discharging into municipal systems entering the East River sewage treatment plant, while seven send sewage to the Pictou system. Two businesses (Sponagle Transmission and the Stuff 'N Fluff Laundromat) use the Westville system. Advocate Printing and Publishing send sewage to the Central West River; Michelin Tires uses the Middle River Reservoir and the Ivor MacDonald Rink empties wastewater into the Thornburn Marsh System. Most of the stated discharges fell between 166.1 m<sup>3</sup>/year and 7,141.0 m<sup>3</sup>/year (Figure 4). Nine businesses have septic systems on site.

Although most sewage and wastewater discharges are treated before they empty into bodies of water, the levels of treatment may vary. As in the Miramichi area, sewage treatment systems are in disrepair and are not believed to be able to handle current loads.

Only two companies (Michelin Tires and Scott Maritimes Limited) had records of the chemical concentration of the materials in the final effluent. Nine other businesses attempted to fill in this portion of the survey but were unable to provide specific discharge concentrations and are omitted from the following discussion.

The Michelin Tires plant in Granton provided information concerning several heavy metals (aluminum, copper, iron and zinc) in the liquid waste stream. Copper and zinc

Table 14. Direct discharges and discharge rates in Pictou Region.

Company	Centre	Type of Discharge	Receiving Water	Discharge Frequency	Discharge Rate
A&R Laundromat	New Glasgow	sewage & wastewater	East River STP	intermittent	n.s.
Abercrombie Animal Hospital	New Glasgow	sewage & wastewater	Septic system	intermittent	n.s.
Acadian Lines Ltd.	New Glasgow	sewage & wastewater	East River STP	intermittent	401.5 m <sup>3</sup> /yr.
Advocate Printing and Publishing	Pictou	septic system to Central West River	Central West River	intermittent	n.s.
Alex Macdonald Motors	Marshy Hope	sewage & wastewater	Septic tank to brook	intermittent	n.s.
Alex Macdonald Printing	New Glasgow	sewage & wastewater	East River STP	intermittent	n.s.
Anchor Motors Ltd.	New Glasgow	sewage & wastewater	East River STP	continuous	273.0 m <sup>3</sup> /yr.
Beaussejour's Irving	Westville	sewage & wastewater	Septic system	intermittent	n.s.
Bluenose Curling Club	New Glasgow	sewage & wastewater	East River STP	intermittent	166.1 m <sup>3</sup> /yr.
Brad Royle's Autobody	Trenton	sewage & wastewater	Trenton STP	intermittent	n.s.
CB Hoare Auto Parts	New Glasgow	sewage & wastewater	East River STP	intermittent	83.0 m <sup>3</sup> /day
Cellidh Motors Ltd.	New Glasgow	sewage & wastewater	Pictou STP	intermittent	n.s.
D. Corbett Rebuilding Ltd	Pictou	sewage & wastewater	Septic system	intermittent	n.s.
Eastern Sign-Print Ltd.	Stellarton	sewage & wastewater	East River STP	intermittent	7,141 m <sup>3</sup> /yr.
Hector Arena	Pictou	sewage & wastewater	Pictou STP	intermittent	n.s.
Ivor Macdonald Rink	Thornburn	sewage & wastewater	Thornburn Marsh STP	intermittent	900 L/day

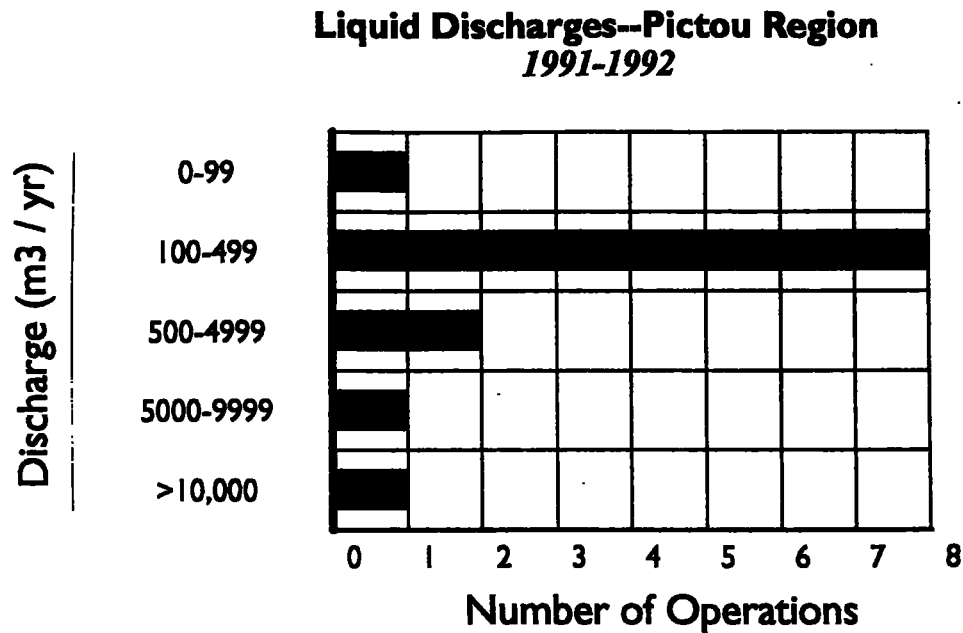
Table 14 (cont). Direct discharges and discharge rates in Pictou Region.

Company	Centre	Type of Discharge	Receiving Water	Discharge Frequency	Discharge Rate
K. Langille Auto Sales	Stellarton	sewage & wastewater	East River STP	intermittent	n.s.
Kelderman Concrete Ltd.	New Glasgow	wastewater and settling pond	East River	intermittent	minimal
Kevin's Service Station	New Glasgow	sewage & wastewater	East River STP	intermittent	n.s.
MacKenzie Septic Service	Westville	sewage & wastewater	Westville STP	intermittent	n.s.
Michelin Tires Ltd.	New Glasgow	sewage & wastewater	Middle River Reservoir	continuous	580.4 m <sup>3</sup> /yr.
Perry's Autobody	Pictou	washwater	Pictou Harbour	intermittent	minimal
Pictou District School Board	Westville	sewage & wastewater	Treatment plant on site	intermittent	1000 L/day
Pictou Fisheries Training Pool	Pictou	sewage & wastewater	Pictou STP	intermittent	n.s.
Pictou Golf+Country Club	Pictou	sewage & wastewater	Septic system	intermittent	n.s.
Pictou Lodge Resort	Pictou	sewage & wastewater	Own sewage treat plant	intermittent	N/A
Pictou Medical Centre	Pictou	sewage & wastewater	Pictou STP	intermittent	n.s.
Quality Cleaners Ltd.	New Glasgow	sewage & wastewater	New Glasgow STP	intermittent	n.s.
Scotsburn Dairy Group	Stellarton	sewage & wastewater	East River STP	continuous	n.s.



Table 14 (cont). Direct discharges and discharge rates in Pictou Region.

Company	Centre	Type of Discharge	Receiving Water	Discharge Frequency	Discharge Rate
Scott Maritimes Ltd.	New Glasgow	sewage & wastewater, Boat Harbour	Pictou Harbour	continuous	30.5-36.1 million m <sup>3</sup> /yr.
Sigi's Auto Service	Stellarton	sewage & wastewater	Septic system	intermittent	166.0 m <sup>3</sup> /yr.
Sponagle Transmission	Westville	sewage & septic tank	Westville STP	intermittent	166.0 m <sup>3</sup> /yr.
Stuff 'N Fluff Landromat	Westville	sewage & wastewater	Westville STP	intermittent	1495-1661 m <sup>3</sup> /yr.
Summer Street Industries	New Glasgow	sewage & wastewater	East River STP	intermittent	166.1-498.2 m <sup>3</sup> /yr.
Sutherland Hospital	Pictou	sewage & wastewater	Pictou STP	intermittent	n.s.
Trenton Community Rink	Trenton	sewage & wastewater	East River STP	intermittent	n.s.
Warren Maritimes Ltd.	New Glasgow Broadway	sewage & wastewater sewage & wastewater	Septic system East Branch French River	intermittent intermittent	N/A N/A



**Figure 4. Liquid discharges from businesses/operations in the Pictou Region, which provide discharge estimates.**

are on the restricted substances list but are in minimal amounts in the final effluent (0.12 ppm and 0.11 ppm, respectively). Levels of other metals included: aluminum (0.64 ppm) and iron (0.16 ppm). These compare with copper and zinc levels at the Michelin Tires plant in Bridgewater (0.14 mg/L and 0.71 mg/L, respectively in 1981 (Boyle 1990). The concentration of aluminum in Michelin effluent was 1.53 mg/L and iron was 2.0 mg/L. Sulphate levels measured in effluent in 1992 was 45.7 ppm (Boyle, 1990), which is below the 500 mg/L in Michelin's provincial operating permit.

Scott Maritimes Limited provided information for BODs, CODs and total suspended solids for effluent leaving the mill, as well as its concentration just before it enters the Boat Harbour treatment facility. The reported amounts were: BOD (63.0 ppm and 17.3 ppm respectively), COD (200.5 ppm and 116.2 ppm respectively), and total suspended solids (40.9 to 7.8 ppm respectively).

Scott Maritimes Limited must follow federal pulp and paper effluent regulations regarding biochemical oxygen demand, total suspended solids and toxicity. For 1991 they were allowed suspended solids discharges to the Boat Harbour sewage treatment plant of 18.2 kg/T and BODs equal to or below 45.5 kg/T. Scott was well below these rates. The company has an ash lagoon for emergency outfall only (Boyle, 1990).

## 5.0 CHEMICALS OF ENVIRONMENTAL CONCERN<sup>3</sup>

### 5.1 Miramichi Watershed

#### Major Producers

The wood processing and forest products sector, as well as the mining sector, made the largest contributions to total chemical use and requirements in the region. The pulp producer Allcell Technologies used large quantities of various chemicals, was the major user of acids (chiefly sulphuric) and the strong base sodium hydroxide (quantities of 16,000 and 46,000-173,000 L/year, respectively). The company also used significant amounts of ethanol (Table 4). Forest Protection Limited, which is also in the forestry sector, handled large quantities of the pesticide fenitrothion.

Heath Steele Mines uses large amounts of various process chemicals and was the second largest user in the region, handling heavy metals such as copper and products containing benzene. Heath Steele uses large quantities of calcium hydroxide in treating effluent, as well as smaller quantities of ammonium hydroxide and sodium hydroxide.

Apart from the major industries, several other business sectors (autobody, car wash and sign making) used either significant quantities or chemicals of particular environmental concern. Major users were Gerry's Autobody, which reported use of moderate amounts of paint, primer and thinners; sign painters (Blaircan Signs and Dickson Signs) which also use paint, primer and thinners; car washes (Kwick'N EZ Car Wash and Fernrob Pressure Cleaning Systems) which use detergents such as Filmgone and Super L, which contain components such as benzene and formaldehyde; and printing companies (Gemini Printing, Miramichi Web Limited and Newcastle Printing) which use various inks, and cleaners (including moderate amounts of blanket wash for cleaning ink from rollers).<sup>4</sup>

#### Key Contaminants

In the following discussion, contaminants have been grouped into major categories, including: metals and minerals; organic chemicals; and acids and bases (Tables 15, 16 and 17).

*Metals and Minerals:* A significant quantity (713,000 kg/year) of copper is used as an activation agent for zinc sulphide by Heath Steele Mines. Releases enter the waste stream and thus can enter the nearby watershed. Copper, released in effluent, has been detected in lethal amounts (for fish) in the South Tomogonops

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<sup>3</sup> Chemicals of concern include: toxic substances and prohibited and restricted substances under the ocean dumping provisions of CEPA; and chemicals on CEPA Priority Substances Lists.

<sup>4</sup> Gemini Printing has changed the chemicals it uses to water-based solutions, and has also installed a system for recovering silver from liquid wastes.

River. Gerry's Autobody used between 46 and 76 L of Dupont paint (containing 10-30% lead) in 1991 and 1992 respectively.

**Organic Compounds:** Heath Steele Mines uses Noret Activated carbon containing 780 kg of benzene at 0.1%, while the Kwick'N EZ Car Wash used between 20-62 L in Super L (10-30% benzene) on average per year. Heath Steele Mines uses 90-100% cyanide in amounts of 20,900 and 22,000 kg/year for 1991 and 1992, respectively. Gerry's Autobody uses products containing varying concentrations of toluene and xylene, totalling between 32-96 L/year and 3-178 L/year, respectively.

**Acids and Bases:** Three companies reported use of significant amounts of acids in their operations. Alcell Technologies Inc. consumes 16,000 L of sulphuric acid yearly. Heath Steele Mines consumes 4% cresylic acid at 700 kg/year and an 85% dicresyldithiophosphoric acid at 14,875 kg/year, which are both part of a lead sulphide collector (Aerofloat 241). The Northumberland Co-op dairy used up to 180 L of 5% acetic acid, 3,240 L of 45% nitric acid and 4,320 L of 30-60% phosphoric acid, as components of DFT-171 and Exalt II (industrial cleaners and sanitizers) (Table 16).

Table 15. Restricted or listed priority substances used in the Mirachimi watershed in quantities of 10 units (kg or L) or more.

Contaminant	Amount Used* Combined Range for 1991 & 1992	Units	Concent- ration in Product (%)	Company
<b>METALS AND MINERALS</b>				
Copper	713,000	kg	100%	Heath Steele Mines
Lead	23-68	L	10-30%	Gerry's Autobody
	23-68	L	10-30%	Gerry's Autobody
<b>ORGANICS</b>				
Benzene	780	kg	0.1%	Heath Steele Mines
	20-62	L	10-30%	Kwick'N EZ Car Wash
Cyanide	20,900-22,000	kg	95-100%	Heath Steele Mines
	7-16	L	3-7%	Gerry's Autobody
Dibutyl phthalate	20-40	L	0.5-1.5%	Atlantic Institute
Dichlorocyanurate	22-53	kg	3-7%	Northumberland Co-op
Fenitrothion	40665	L	79%	Forest Protection Ltd.
Formaldehyde	37	L	54%	Gemini Printing
Tetrachloroisosolinone	2-11	L	1-5%	Gerry's Autobody
Toluene	32-96	L	10-30%	Gerry's Autobody
Xylene	3-178	L	1-60%	Gerry's Autobody

\* amount of component chemical based on minimum concentration in product and amount of product used.

**Table 16. Acids used in Miramichi and Pictou Watersheds in quantities of 10 units (kg or L) or more.**

Contaminant	Average * Amount Used 1991 & 1992	Units	Concentration in Product (%)	Company
<b>Miramichi</b>				
Acetic acid	36-180	L	1-5%	Northumberland Co-op
Cresylic acid	700-700	kg	4%	Heath Steele Mines
Dicresyldithio- phosphoric acid	14875-14875	kg	85%	Heath Steele Mines (85%)
Nitric acid	1080-3240	L	15-45%	Northumberland Co-op
Phosphoric acid	1080-2160	L	30-60%	Northumberland Co-op
	720-2160	L	10-30%	Northumberland Co-op
Sulphuric acid	16000- --	L	100%	Alcell Technologies Inc.
<b>Pictou</b>				
Acetic acid	580-811	L	50-70%	Sutherland Harris Hospital
	49-99	L	5-10%	Sutherland Harris Hospital
	46-231	L	1-5%	Scotsburn Dairy Group
	12-22	L	7-13%	Perry's Autobody
	n.s.	L	100%	Pictou District School Bd
	0-0	L	2.7%	Alex MacDonald Printing
Citric acid	13-26	L	5-10%	NS Fisheries Training Pool
Hydrochloric acid	299-448	L	20-30%	Pictou Distric School Bd
	149-448	L	10-30%	Pictou Distric School Bd
Hydroxyacetic acid	0-0	L	(?)	Advocate Printing
Nitric acid	564-1693	L	15-45%	Scotsburn Dairy Group
Phosphoric acid	1387-2774	L	30-60%	Scotsburn Dairy Group
	376-1129	L	10-30%	Scotsburn Dairy Group
	26-77	L	10-30%	NS Fisheries Training Pool
	22-65	L	10-30%	Scotsburn Dairy Group
Stearic acid	182000-182000	kg	100%	Michelin Tire
Sulphuric acid	2741182-4568636	L	60-100%	Scott Maritimes Ltd.
	10920-18200	kg	60-100%	Michelin Tire
	358-398	L	90-100%	Pictou District School Bd
	11-12	L	90-100%	Sutherland Harris Hospital

n.s. Not specified but quantity may be significant

\* amount of component chemical based on minimum concentration in product and amount of product used.

*Three companies reported use of significant amounts of bases in their operations. Alcell Technologies Inc. used a maximum of 172,727 kg/year of sodium hydroxide (used mainly to control pH in metal ore flotation processes), while the Atlantic Institution (Correctional Services of Canada) used 150 L. Heath Steele Mines uses between 700 and 1,220 kg/year of sodium hydroxide, as well as, 230 kg of ammonium hydroxide and a maximum of 2,400,000 kg of calcium hydroxide, yearly.*

Table 17. Bases used in the Miramichi and Pictou Harbour watersheds in quantities of 10 units (kg or L) or more.

Contaminant	Amount Used* Combined Range for 1991 & 1992	Units	Concent- ration in Product (%)	Company
<b>Miramichi</b>				
Ammonium hydroxide	210-230	kg	1%	Heath Steele Mines
Calcium hydroxide	2,400,000-1,376,000	kg	100%	Heath Steele Mines
Sodium hydroxide	172727-46364	kg	100%	Alcell Technologies Inc.
	700-1220	kg	5-10%	Heath Steele Mines
	150-150	L	1.5%	Atlantic Institution
<b>Pictou</b>				
Calcium hydroxide	16154546-8518182	kg	100%	Scott Maritimes Ltd.
Potassium hydroxide	14-17	L	1%	Kelderman Concrete
	2-26	L	10-30%	Scotsburn Dairy Group
	10-13	L	1-5%	Sutherland Memorial Hospital
	3-3	L	17.1%	Alex MacDonald Printing
Sodium hydroxide	1050955-920864	kg	9-60%	Scott Maritimes Ltd.
	9091-9091	kg	100%	Town of Stellarton
	1800-3433	kg	9-60%	Town of New Glasgow
	1860-0	kg	60-100%	Scotsburn Dairy Group
	0-93	kg	60-100%	Scotsburn Dairy Group
	38-46	L	10-30%	Sutherland Memorial Hospital
	14-17	L	1%	Kelderman Concrete
	6-6	L	1-5%	Pictou District School Board
	2-1	L	10-30%	Sutherland Memorial Hospital
	2-2	L	1%	Pictou District School Board
	1-1	L	1%	Sutherland Memorial Hospital
	n.s.	L	15-35%	Eastern Sign-Print Ltd.
	n.s.	L	30%	Eastern Laundry Service

n.s. = not specified but quantity may be significant

\* amount of component chemical based on minimum concentration in products and amount of product used.

## 5.2 Pictou Harbour Watershed

### Major Producers

Michelin Tires and Scott Maritimes Limited as the largest industries were major users of chemicals, both in quantity of chemicals used and in use of chemicals of environmental concern. The main chemicals were large quantities of sulphuric acid at both operations, stearnic acid (Michelin), and asbestos, zinc, and sodium hydroxide (Scott Maritimes).

The automotive sector made a significant contribution to total chemical usage in the area and to the profile of contaminants of concern. Sale of gasoline accounted for significant quantities of toxic substances. Large quantities of gasoline (containing several toxic components, benzene, toluene and xylene) are sold by the gas stations responding to the survey (Sigi's Auto Service and Warren Maritime Limited). Autobody companies including Brad Royle's Autobody, Forsythe Autobody, John Palmer Autobody, and Perry's Autobody, used large amounts of paint, primer and thinners, all of which have toxic components.

The three printing companies use inks and blanket washes that contain chemicals of concern, though usually in low concentrations. These included: Advocate Printing and Publishing, Alex MacDonald Printing, and Eastern Sign-Print Limited (Eastern Sign-Print did not provide amounts but is believed to be a major contributor).

Apart from the major industries, several other business sectors contributed either significant quantities of chemicals or chemicals of particular environmental concern. Dry cleaners (Eastern Laundry Service, Quality Cleaners and Stuff'N Fluff) and the Sutherland Hospital, use products with toxic components such as erusticators and germacidal cleaners. Rinks (Hector Arena, Ivor MacDonald Memorial Rink, Bluenose Curling Club and the Trenton Community Rink) and a refrigeration company (Wayne's Refrigeration) use CFCs.

#### Key Contaminants

**Metals and Minerals:** Michelin Tires reported use of 520 kg of asbestos and 3,780 kg of lead in 1991-1992. Lead (maximum concentration of 30%) is a component of paint used by all four autobody shops, totalling between 270 L and 802 L. In addition lead is a constituent of printers' ink. Quantities of this chemical in inks were not estimated, however (Table 18).

**Organic Compounds:** Blanket washes used by printers contain up to 32% benzene. Alex MacDonald Printing was the only company to provide information on annual use, which, in this case, was between 27-35 L/year. Perry's Autobody was the only body shop to report having a significant amount of paint containing cyanide, (10-24 L). Toluene is a component in chemicals used in both autobody and printing sectors. Total use of toluene in the Pictou area was between 133 and 1,022 L/year in paint, primer, reducer, thinners and blanket wash. Autobody paint also contains between 1-60% xylene totalling 14 and 806 L.

**Hydrocarbons:** Two companies sold large quantities of gas in the Pictou area in 1991-92. Gasoline contains benzene (1-5%), as well as toluene and xylene (10-30%). Based on the percent content of these compounds in gasoline, Sigi's Auto Service sold 40,000 L/year of gas or 400-2,000 L of benzene and 4,000-12,000 L of toluene and xylene. Warren Maritimes Limited sold 45,000 L/year of gas or 450-2,250 L of benzene and 4,500-13,500 L of toluene and xylene.

**Acids and Bases:** Michelin Tires reported use of 182,000 kg/year of stearic acid and between 10,920 and 18,200 kg/year of sulphuric acid (Table 16). Significant amounts of sodium hydroxide are used by Scott Maritimes Ltd. (between 1,050,955 and 920,864 kg/year), the Town of Stellarton (9,091 kg/year), New Glasgow (1,800 and 3,433 kg/year) and the Scotsburn Dairy Group (1,860 kg/year). Scott Maritimes

Ltd. reported use of between 16,154,546 and 8,518,182 kg/year of calcium hydroxide. Kelderman Concrete, the Sutherland Harris Memorial Hospital and Scotsburn Dairy Group, on average use 14 L/year of potassium hydroxide (Table 17).

**Table 18. Restricted or listed priority substances used in the Pictou watershed in quantities of 10 units (kg or L) or more.**

Contaminant	Amount Used* Combined Range for 1991 & 1992	Units	Concent- ration in Product (%)	Company
<b>METALS AND MINERALS</b>				
Asbestos	520	kg	(?)	Michelin Tire
Fluorine (fluoride)	1,250	L	100%	Town of New Glasgow
Lead	92-272	L	10-30%	Forsythe Autobody
	92-272	L	10-30%	John Palmer Autobody
	68-204	L	10-30%	Perry's Autobody
	18-54	L	10-30%	Brad Royle's Autobody
Zinc	3780	kg	100%	Michelin Tires
<b>ORGANICS</b>				
1,1,1-Trichloroethane	43-48	L	90-100%	Linmac Industrial
	16-27	L	60-100%	Brad Royal's Autobody
Benzene	450-2,250	L	1-5%	Warren Maritimes Ltd.
	400-2,000	L	1-5%	Sigi's Auto Service
	27-35	L	25-32%	Alex MacDonald Printing
	24-72	L	10-30%	Bob's EZ Clean Car Wash
	19-57	L	10-30%	Sutherland Harris Hospital
	14-68	L	1-5%	Pictou District School Board
	1-0	L	1-3%	Summer Street Industries
	1-0	L	3-12%	Pictou District School Board
	1	kg	95%	Pictou District School Board
	1-1	L	1-5%	Sutherland Harris Hospital
CFCs (CFC-12) (CFC-22)	161	kg	100%	Wayne's Refrigeration
	154	kg	100%	Wayne's Refrigeration
	45	kg	100%	Ivor MacDonald Rink
	164	kg	100%	MacCulloch Truck Service
	0-0	L	100%	Trenton Rink
(CFC502)	87	kg	100%	Wayne's Refrigeration
Cyanide	10-24	L	3-7%	Perry's Autobody
	7-16	L	3-7%	John Palmer Autobody
	7-16	L	3-7%	Forsythe Autobody
	3-6	L	3-7%	Brad Royal's Autobody
	n.s.	L	1-5%	Eastern Sign-Print Ltd.
	n.s.	L	15-20%	Eastern Sign-Print Ltd.



Table 18 (cont). Restricted or listed priority substances used in the Pictou watershed in quantities of 10 units (kg or L) or more.

Contaminant	Amount Used* Combined Range for 1991 & 1992	Units	Concentration in Product (%)	Company
Dichlorocyanurate	9-20	kg	3-7%	Scotsburn Dairy Group
Dichloromethane	17	L	85%	Summer Street Industries
Formaldehyde	48	L	1%	Kelderman Concrete Ltd.
	10	L	54%	Alex MacDonald Printing
Tetrachloroisosolinone	3-17	L	1-5%	Perry's Autobody
	2-11	L	1-5%	Forsythe Autobody
	2-11	L	1-5%	John Palmer Autobody
Toluene	4,500-13,500	L	10-30%	Warren Maritimes Ltd. **
	4,000-12,000	L	10-30%	Sigi's Auto Service **
	725-928	L	25-32%	Advocate Printing+Publishing
	28-35	L	25-32%	Alex MacDonald Printing
	23-68	L	10-30%	Jonh Palmer Autobody
	23-68	L	10-30%	John Palmer Autobody
	23-68	L	10-30%	Forsythe Autobody
	23-68	L	10-30%	Forsythe Autobody
	17-52	L	10-30%	Perry's Autobody
	5-136	L	1-30%	John Palmer Autobody
	5-136	L	1-30%	Forsythe Autobody
	4-109	L	1-30%	Brad Royal's Autobody
	3-102	L	1-30%	Perry's Autobody
	2-68	L	1-30%	Forsythe Autobody
	2-68	L	1-30%	John Palmer Autobody
	2-52	L	1-30%	Perry's Autobody
	1-27	L	1-30%	Brad Royal's Autobody
	1-38	L	1-30%	Pictou District School Board
Xylene	4,500-13,500	L	10-30%	Warren Maritimes Ltd. **
	4,000-12,000	L	10-30%	Sigi's Auto Service **
	5-273	L	1-60%	John Palmer Autobody
	5-273	L	1-60%	Forsythe Autobody
	3-205	L	1-60%	Perry's Autobody
	1-55	L	1-60%	Brad Royal's Autobody

\* amount of component chemical based on minimum concentration in product and amount of product used.

\*\* solvents in gasoline

## 6.0 RECOMMENDATIONS

A complete cross-section of businesses, organizations and sectors were covered in the mail-out, and the information gathered is useful in presenting a snap-shot of overall use of chemicals, as well as an update on the activities of some of the major industries. Many groups and sectors were not represented in the returns we received, however, and many either returned uncompleted surveys or provided incorrect information. Many of the major industrial operations (e.g. Miramichi Pulp and Paper; New Brunswick Power; Tibbett's Paints (New Glasgow)) did not reply to the survey. Some mechanism must be developed for encouraging these operations to participate in future surveys of this type.

Commonly the survey recipients were not significant users of chemicals (e.g. insurance companies, government offices, schools) and the survey questions--which tended to focus on industrial operations--were of little relevance. Future surveys should be written to acknowledge the different scales of chemical use involved in various sectors, and to provide simplified instructions for those operations not normally dealing with chemical usage, discharges etc.

Many of the above problems could be alleviated by carrying out a more focused study of individual sectors. The present data provides insight into chemical use by several sectors, particularly the printing business, dry cleaning, autobody operations, and dairies. It does not, however, adequately represent all sectors. More quantitative information and conclusions could be contained by focusing a study on particular sectors, ensuring adequate representation by follow-up and site visits. The profile of businesses in the region should allow us to identify sectors for which the survey did not provide adequate information to characterize chemical use patterns. A representative number of businesses in each sector should be targetted for telephone and personal visits to determine a detailed profile.

Several types of operations were shown to use significant quantities or volumes of chemical discharge. The automotive service sector (although not generally considered as an industrial chemical user) is responsible for use and transport of major quantities of fuels which contain components which are chemicals of concern. Use patterns in this industry may have been targetted elsewhere, but can pose significant hazards to the environment because of the large volumes of product involved. The milk processing industry uses large volumes of water and associated cleaning products and disinfectants which are discharged into both watersheds.

The range of information gathered in the survey was broad, encompassing hundreds of products and chemicals, as well as a cross section of industries. A range of contaminants and chemicals of concern are in use in the study areas, either in pure form or (more commonly) as components of commonly used products. The cross section provided here gives an indication of some of the patterns which may exist given the scope of the project, but it may not fully represent the range actually in use in the area. We did not make an attempt to evaluate how well the survey represents businesses in the area as a whole. This type of analysis should be conducted before results of this survey are interpreted.

Several of the businesses in the study reported using service companies to handle

and recycle types of waste. It would be useful to survey the companies listed, as well as to identify others in the sector, as they could be an important transfer pathway for chemicals and may have good volume estimates.

## 7.0 REFERENCES

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**APPENDIX 1**

Appendix 1. Products used and chemical composition for Miramichi Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)	
Alcell Technologies Inc.	Ethanol	ethanol	100%	
	Sodium Hydroxide	sodium hydroxide	100%	
	Sulphuric Acid	sulphuric acid	100%	
	Therminol 55			
	Biocide (Dearcide 717)			
	Poly-el-ph (dispersant)			
	Waste Oil			
	Pulp/Lignin Furfural			
Blaircan Signs Ltd.	Varsol	stoddard solvent	100%	
	Spray Paint			
	Spar Varnish			
Atlantic Institution	Bleach (12%)	sodium hypochlorite	12%	
	Triple C Chemical #598	barquat MB-50	5-15%	
		ethyl alcohol	1.5-2.0%	
		methyl alcohol	.05%	
	Triple C Chemical #570	sodium nitrate	30-40%	
		Dustbane		
	Airken 125 Drysec			
	G.H. Wood Rug Shampoo			
	Highway Salt			
	Calcium Chloride	calcium chloride	100%	
	Baygon Insecticide	aromatic petroleum distillate		
		baygon		
		isopropanol		
		nonylphenol		
octylphenoxy				
Super High Speed Stripper	poly(ethoxyethanol)			
	isopropanol	5-10%		
Super 18 Floor Finish	sodium hydroxide	5-10%		
	ammonia	0.1-1%		
Allbrite	dibutyl phthalate	0.5-1.5%		
	diethylene glycol monoethyl ether	1-5%		
	ethylene glycol	1-5%		
Germicidal Multi Purpose Clean	isopropyl alcohol	7-13%		
	quaternary ammonium chloride	9.6%		
	sodium metasilicate	5%		

Appendix 1. Products used and chemical composition for Miramichi Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)	
Atlantic Institution (cont)	Power Plus	coconut diethanolamide	1-5%	
		diethanolimine dodecylbenzenesulphonate	3-7%	
		diethanolimine oleate	5-10%	
		nonyl phenol ethoxylate	1-5%	
	SADA	propylene glycol	1-5%	
		tetrasodium EDTA	0.1-1%	
		poly-alpha-omega-hydroxy	1-5%	
		sodium 2-ethylhexyl sulfate	3-7%	
		sodium acrylate silicate ester	10-30%	
		sodium dimethylbenzenesulfonate	1-5%	
	CAIROX R KMnO4	potassium permanganate	97%	
	Triple C Chemical #739-L	sodium carbonate	0.1%	
		sodium sulphate	0.4%	
		sodium sulphite	18-25%	
	Triple C Chemical #880	inert material	50-70%	
		morpholine	30-50%	
	Round Up Engine Degreaser 666 Safty Clean Car Wash Soap Grease Digester Jep Flow			
Dickson Signs	Master Craft Laquer Thinner	methanol		
		methyl ethyl ketone		
toluene				
One Shot Sign Paint	aromatic hydrocarbons			
	cadmium dioxide			
	copper compound			
	lead			
	limestone			
	mineral spirits			
	napha titanium dioxide			

Appendix 1. Products used and chemical composition for Miramichi Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Kwick'N EZ Car Wash	SuperL	ammonium lauryl ether sulphate	5-10%
		formaldehyde	0.1-1%
		sodium dodecylbenzene-sulphonate	10-30%
	Filmgon	nitrilotriacetate	1-5%
		tetrasodium EDTA	
		nonyl phenol ethoxylates	1-5%
Fernrob Pressure Cleaning Systems	Blue Thunder	trisodium	3-7%
		sodium metasilicate	1-5%
	Carbon-ate Liquid	ethylene glycol monobutyl ether	30-60%
		ethoxylated alcohols	30-60%
	Carbochlor Liquid	ethoxylated alcohols	30-60%
		ethylene glycol monobutyl ether	30-60%
Nytro	ethoxylated alcohol	1-10%	
	sodium metasilicats	5-10%	
Forest Protection Ltd.	Fenitrothion (Sumithion)	atlox 3409F	10.5%
		dowanol TPM	10.5%
		technical fenitrothion	79%
	Futura XLV-HP	Dipel 64 AF	
		Foray 48B	
		Foray 76B	
Gemini Printing	AGFA 2-Developer	hydroquinone	11.5%
		potassium hydroxide	0.9%
		sodium formaldehyde bisulfite	54%
	Varsol	stoddard solvent	100%
		AGFA 2-Fixer	acetic acid
	Kodak PMT Activater	sodium bisulfite	2.7%
		2-methylaminoethanol	1-5%
		glycerol	1-5%
	sodium sulfite	5-10%	
	sodium thiosulfate	1-5%	

Appendix 1. Products used and chemical composition for Miramichi Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Gemini Printing (cont)	Kodak Ultratec Tray Developer	3-diethylamino-1,2-propanediol	1-5%
		disodium phosphate	5-10%
		hydroquinone	1-5%
		potassium sulfite	1-5%
		sodium sulfite	1-5%
	Kodak Ultratec Fixer	trisodium phosphate	5-10%
		ammonium thiosulfate	40-50%
		boric acid	5%
	AZO ND-143 Negative Developer	N/A	
	AZO FPC Finisher Preserver		
Graph Star Starwash			
Gerry's Autobody	Dupont Hardener	acetic acid	7-13%
		aluminum chloride	30-60%
	Dupont Thinner	2,2,4 trimethyl 1,3 pentane-diol monoisobutyrate	3-7%
		VM+P naphtha	15-60%
		acetone	5-30%
		diisobutyl ketone	3-7%
		ethyl acetate	7-30%
		ethylene glycol monobutyl ether acetate	1-5%
		methyl ethyl ketone	7-13%
		n-butyl acetate	5-10%
		toluene	1-30%
		Dupont Reducer	2,2,4 trimethyl 1,3 pentane-diol monoisobutyrate
	VM+P naphtha		15-40%
	Centari Dupont Reducer	acetone	10-30%
		ethyl acetate	10-30%
		toluene	10-30%
		VM+P naphtha	1-60%
	Centari Acrylic Enamel Paint	acrylic resin	10-30%
		alkyd resin	7-30%
		aluminum flake	0.5-5%
		aromatic hydrocarbon	0.5-10%
		barium sulfate	0.5-1.5%
		bon red pigment	5-10%
carbon black pigment		0.5-1.5%	
cobalt naphthenate		0.1-5%	



Appendix 1. Products used and chemical composition for Miramichi Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)	
Gerry's Autobody (cont)	Centari Acrylic Paint (cont)	dioxazine carbonzole pigment	0.5-1.5%	
		ethylene glycol monobutyl ether acetate	1-5%	
		ferric ferrocyanide pigment	3-7%	
		indofast violet pigment	1-5%	
		iron oxide pigment	3-30%	
		lead chromate molybdate pigment	10-30%	
		lead chromate pigment	10-30%	
		medium mineral spirits	0.1-10%	
		methyl ethyl ketone	1-30%	
		monoazo pigment	1-5%	
		n-butyl acetate	0.5-30%	
		perylene pigment	3-7%	
		phthalocy anine blue pigment	1-5%	
		phthalocy anine green pigment	1-5%	
		primary anyl acetate	0.5-1.5%	
		propylene glycol monomethyl ether acetate	0.1-10%	
		quinacridone pigment	1-7%	
		tetrachloroisosolinone yellow	1-5%	
		thio fast red	1-5%	
		titanium dioxide	1-30%	
		toluene	1-30%	
		xylene	10-60%	
			Montana Wax and Grease Remover	
Goody Shop	Quik-Dry Rinse Additive LSP 105 Detergent			
Heath Steele Mines	Aero+ 343 Xanthate	isopropanol	0.5-1%	
		sodium hydroxide	1.5%	
		sodium sulfide	1%	
		calcium lime	90%	
		Sulfur Dioxide	60-100%	
		Soda Ash	N/A	
		Hydrated Lime	calcium hydroxide	
		Copper Sulfate	copper sulfate pentahydrate	100%
Noret Activated Carbon	activated carbon	100%		
	benzene	0.1%		

Appendix 1. Products used and chemical composition for Miramichi Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)	
Heath Steele Mines (cont)	Methyl Isobutyl Carbinol	methyl isobutyl carbinol	95-100%	
	Sodium Cyanide	sodium cyanide	95-100%	
	Aerofloat+ 241 Promoter		ammonium hydroxide	1%
			creylic acid	0-4%
	Aero+ 5100 Promoter		dicresyldithiophosphoric acid	85%
			isobutanol	7.5%
	Percol 351	N/A		
	Percol 338	N/A		
	Sodium Silicate	sodium silicate		
	Wheat Dextrin	starch		
	B-Line			
	Blasting Caps			
	Dynamite			
	Tovex and Emulsions			
	Potassium Permanganate	potassium permanganate		
PCB Transformer Oil				
Speld 3700	dithiophosphate			
LaRoche Carpet Cleaning	Carpet Detergent			
	Ban-All			
	Stain Remover			
Miramichi Web Inc.	Rosos Acid Fountain Solution	N/A		
	Kodak PWT Activator		2-methylaminoethanol	1-5%
			glycerol	1-5%
			sodium sulphite	5-10%
			sodium thiosulfate	1-5%
	Varn Nutra-Web			
	Park Ultra-I Web Wash			
	Wipe Out Blanket Cleaner			
	Printing Ink			
	Newcastle Printing Ltd.	Varn California Wash		
		Varn Pronto		
Varn Superlene Fountain Sol.				
Silvermaster Fountain Solution				
Silvermaster Activator				
Silvermaster Stabilizer				
Printing Ink				

Appendix 1. Products used and chemical composition for Miramichi Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Northumberland Co-op Ltd.	Steri Gel	BTC 2125H	0.1-1%
		hydroxyethyl cellulose	1-5%
	Pennlube 300	pine oil	0.1-1%
		EDTA Salt	5-10%
		ethoxylated alcohol sulfate	1-5%
		grotan BK	0.1-1%
	MC-9	isopropanol	1-5%
		amine oxide	1-5%
		dichloroisocyanurate	3-7%
		linear alkyl aryl sulfonate	3-7%
	Liqua Terg	sodium carbonate	10-30%
		alkylphenoxypolyethoxyethanol	1-5%
		grotan BK	0.1-1%
	DFT-171	linear alkyl aryl sulfonate	15-40%
acetic acid		1-5%	
Chloclean Liquid Plus	phosphoric acid	30-60%	
	caustic potash	40-70%	
Exalt II	sodium hypochlorite	10-30%	
	nitric acid	15-45%	
	phosphoric acid	10-30%	
Old Mill Pond Golf and Country Club	Daconil 2787 Turf Fungicide		
	Par III Turf Herbicide		
	Roural Green Turf Fungicide		
	Terson 1991 Turf Fungicide		
	Turf Fertilizer 6-2-0		
	Turf Fertilizer 20-5-10		
	Weed + Feed Turf Fertilizer		
Russell's Cleaners (Chatham) (Newcastle)	Perchlorium Distillate	perchloroethylene	
	Perchlorium Distillate	perchloroethylene	

## APPENDIX 2

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Acadian Lines Ltd.	Dustbane Quavo Plus Detergent	didecyl dimethyl ammonium chloride	1.4%
		dioctyl dimethyl ammonium chloride	1.4%
		ethanol	1.1%
		octyl decyl dimethyl ammonium chloride	2.8%
	Dustbane Citrus Foam Spray		
	Lysol		
	Glass Cleaner	C3-C4 alkanes	5-10%
		ethylene glycolmonobutyl ether	1-5%
		isopropanol	1-10%
		isopropanol	1-10%
Advocate Printing and Publishing	Lithographic Printing Ink Fountain Solution	N/A	
		diethylene glycol ethyl ether	2-2.5%
		ethylene glycol	3-4%
	Blanket Wash	hydroxyacetic acid	3-4%
		methanol	15-16%
		methylene chloride	55.7%
		toluene	25-32%
Alex MacDonald Motors	Waste Oil	petroleum middistillate	100%
Alex MacDonald Printing	122A Developer	hydroquinone	11.5%
		sodium formaldehyde bisulphite	54%
	122B Developer	potassium hydroxide	17.1%
		acetic acid	2.7
	124 Fixer Liquid Concentrate	sodium bisulfite	2.7%
		benzyl alcohol	3.7%
	956 Negative Plate Developer Superlene	ethylene glycol	5-10%
		ethylene glycol butyl ether	7-13%
		isopropanol	5-10%
		methylene chloride	10-30%
	Deletion Fluid		

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Alex MacDonald Printing (cont)	Activator PMT	2-methyl-amino-ethanol	1-5%
		glycerol	1-5%
		sodium sulfite	5-10%
		sodium thiosulfate	1-5%
	Fanapart Padding Adhesive	1,2-propylene glycol	20-30%
		denatured ethanol	7-13%
	VWM Wash	light aromatic solvent	40-50%
		medium aliphatic solvent	48-52%
	Mirafix	methanol	15.2%
		methylene chloride	55.7%
		toluene/methyl benzene	25-32%
	Glass Cleaner	C3-C4 alkanes	5-10%
		ethylene glycolmonobutyl ether	1-5%
		isopropanol	5-10%
	Clean and Lube	diacetone alcohol	3-7%
		ethylene glycol butyl ether	10-30%
		light aromatic naptha	10-30%
		medium aliphatic naptha	10-30%
	Rubber Base Plus Colors	organic pigments	15-25%
		petroleum hydrocarbon hydrotreated	10-30%
polymeric wax blend		5-10%	
synthetic resins		20-40%	
vegetable oil		15-30%	
Rubber Base Plus Black		carbon black	15-25%
		petroleum hydrocarbon hydrotreated	10-30%
		polymeric wax blend	5-10%
	synthetic resins	20-40%	
	vegetable oil	15-30%	
Anchor Motors Ltd.	Diesel Oil	petroleum middistillate	100%
Atlantic Speedy Propane	Commercial Propane	ethane	0-5%
		isobutane	0-2.5%
		propane	90-99%
		propylene	1-10%
Beaton's Dental Lab	Methal Hydrate	methanol	99.85%

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)	
Beausejour Irving	Chempro Fresh Scent			
	Chempro All Purpose Cleaner			
	Sanifax Lift			
	No Drip Oil Skin			
	Diversey Superyl			
Bob's EZ Clean Car Wash	Filmgon	nitrilotriacetate tetrasodium-	1-5%	
		EDTA		
	Auto Dri	nonyl phenol ethoxylates	1-5%	
		trisodium	3-7%	
		ethylene glycol monobutyl-ether	1-5%	
		isopropyl alcohol	1-5%	
	SuperL	mineral seal oil	10-30%	
		nonyl phenol ethoxylates	1-5%	
		quaternary ammonium salt	7-13%	
		ammonium lauryl ether sulphate	5-10%	
	formaldehyde	0.1-1%		
	sodium dodecylbenzene-sulphonate	10-30%		
Brad Royle's Autobody	Sunlight Soap	alcohols C12-15 ethoxylated	1-5%	
		sodium alkyl C10-16 aryl sulphonate	7-13%	
		sodium carbonate	15-40%	
		sodium silicate	7-13%	
	White Lightnin	trisodium nitrilotriacetate	10-30%	
		1,1,1-trichloroethane	60-100%	
		calcium sulfonate	1-5%	
		methylal	1-5%	
	Wash'N Wipe	tert-butanol	1-5%	
		Chromabase Paint		
		Centari Acrylic Enamel Paint	VM+P naphtha	1-60%
			acrylic resin	10-30%
		alkyd resin	7-30%	
		aluminum flake	0.5-5%	
		aromatic hydrocarbon	0.5-10%	
		barium sulfate	0.5-1.5%	
		bon red pigment	5-10%	
		carbon black pigment	0.5-1.5%	

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)	
Brad Royle's Autobody (cont)	Centari Acrylic Enamel (cont)	cobalt naphthenate	0.1-5%	
		dioxazine carbonzole pigment	0.1-1.5%	
		ethylene glycol monobutyl ether acetate	1-5%	
		ferric ferrocyanide pigment	3-7%	
		indofast violet pigment	1-5%	
		iron oxide pigment	3-30%	
		lead chromate molybdate pigment	10-30%	
		lead chromate pigment	10-30%	
		medium mineral spirits	0.1-10%	
		methyl ether ketone	1-30%	
		monoazo pigment	1-5%	
		n-butyl acetate	0.5-30%	
		perylene pigment	3-7%	
		phthalocy anine blue pigment	1-5%	
		phthalocy anine green pigment	1-5%	
		primary amyl acetate	0.5-1.5%	
		propylene glycol monomethyl ether acetate	0.1-10%	
		quinacridone pigment	1-7%	
		tetrachloroisosolinone yellow	1-5%	
		thio fast red	1-5%	
		titanium dioxide	1-30%	
		toluene	1-30%	
		xylene	1-60%	
		Dupont Primer	acetone	5-10%
			carbon black pigment	1-5%
			castor oil	1-5%
			dibutyl phthalate	0.5-5%
			ester gum	5-10%
			hydrous magnesium silicate	10-30%
			iron oxide	1-10%
			isopropanol	7-13%
			methyl ethyl ketone	1-7%
			nitrocellulose	5-10%
titanium dioxide	0.5-10%			
toluene	10-30%			
Dupont Thinner	2,2,4 trimethyl 1,3 pentane-diol monoisobutyrate		3-7%	
	VM+P naphtha		15-60%	
	acetone		5-30%	



Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Brad Royle's Autobody (cont)	Dupont Thinner (cont)	diisobutyl ketone	3-7%
		ethyl acetate	7-30%
		ethylene glycol monobutyl ether acetate	1-5%
		methyl ethyl ketone	7-13%
		n-butyl acetate	5-10%
		toluene	1-30%
		Rust Inhibitors	
Ceilidh Motors Ltd.	Varsol Brake Cleaner Carb Cleaner Polymer Coating Remover Waste Oil	stoddard solvent	100%
		petroleum middistillate	100%
D. Corbett Rebuilding Ltd.	Waste Oil	petroleum middistillate	100%
Eastern Laundry Service	Fluff 2000 Laundry Neutralizer	N/A	
		citric acid	20%
	SL-2000 Laundri Prep Detergent 1	phosphoric acid	10%
		sodium hydroxide	30%
		petroleum distillates	65%
	Dynalite Destainer 2000 Erusticator	N/A	
		sodium metasilicates	45%
		sodium hypochlorite	10%
		ammonium bifluoride	15-40%
		butyl carbitol	0.5-1.5%
hydrofluoric acid	10-30%		
Eastern Sign-Print Ltd.	Kodak Ultratec Fix+Replenisher	ammonium thiosulfate	40-50%
		boric acid	5%
		sodium acetate	5-10%
	Kodak PMT II Activator	2-methylaminoethanol	1-5%
		glycerol	1-5%
		hydroquinone	1%
		sodium sulfite	5-10%
		sodium thiosulfate	1-5%
	Kodak SII Deactivator	acetic acid	5-10%
		ammonium thiocyanate	15-20%
		sodium acetate	5-10%
		sodium bisulfite	1-5%
		zirconium acetate	1-5%

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Eastern Sign-Print(cont)	Kodak SII Activator	potassium hydroxide	5-10%
		potassium sodium sulfite mixture	5-10%
	3M Neg. Color Proofing Film	propyl alcohol	40-50%
		triethylene	1-5%
	Kodak Ultratec Tray Developer	3-diethylamino-1,2-propanediol	1-5%
		disodium phosphate	5-10%
		hydroquinone	1-5%
		potassium sulfite	1-5%
		sodium sulfite	1-5%
	Filmopaquer Solvent Pen	trisodium phosphate	5-10%
		propylene glycol monomethyl-ether	
	KP 27 Deletion Fluid	fluoroboric acid	
		n-methylpyrrolidone	
		phosphoric acid	
	Deletion Pen	2-ethoxy ethyl butyl acetate	
	Permanent Blanket Repair	N/A	
		B+R Wash V-133	d-limonene
	Fanapart Padding Adhesive	light aromatic naphtha	5-9%
		medium aliphatic naphtha	75-85%
methylene chloride		8-10%	
1,2-propylene glycol		20-30%	
Multilith Electrostatic Sol.	denatured ethanol	7-13%	
	ammonium phosphate	5-10%	
	glycerol	10-30%	
Wyant Toilet Bowl Cleaner	potassium ferrocyanide	1-5%	
	hydrochloric acid	23%	
	inert ingredients	76%	
Ammoniated Floor Soap	ammonium hydroxide	2%	
	Numbering Machine Ink	dimethyl phthalate	25%
		ethylene glycol monoethyl ether	10%
Rosos Fountain Solution	N/A		
	Isopropyl Alcohol	isopropyl alcohol	100%
	Clean and Lube	aliphatic solvent	
		aromatic solvent	
		chlorinated solvent	
		ketone	
	polyglycol ether		

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Eastern Sign-Print (cont)	Compound 747	aliphatic solvent	
	Ink Drying Stimulator	N/A	
	Ink Readi	1,1,1-trichloroethane	
		4-methyl phenol	
	Litho Etch 141	C3-C4 alkanes	
		glycol ether	
	Wash V-253	aliphatic hydrocarbon	
		aromatic hydrocarbon	
	Wash V-120	polyglycol ether	
		aliphatic hydrocarbon	
	True Blue	aromatic hydrocarbon	
		polyglycol ether	
	Total	aliphatic solvent	
		aromatic solvent	
	Litho Etch 147	glycol	
	Litho Etch 143	glycol ether	
	Finisher Preserver Cleaner	glycol ether	
	ND-143 Azopak	petroleum	7-13%
	KC 24	N/A	
		2-methoxy ethanol	20-25%
	Diacetone Alcohol	benzyl alcohol	
		hydrofluoric acid	
	Butyl Cellulose Acetate	diacetone alcohol	99.8%
		butyl cellulose acetate	99%
	Film Adherent	2-propanol	30-60%
		acetic acid	1-5%
	Screen Ink	acetic acid ethyl ester	10-30%
hexane		30-60%	
Multipurpose Screen Wash	2-butoxyethanol	5-20%	
	diacetone alcohol	30-85%	
Special T	1-methoxy-2-propanol acetate	30-60%	
	petroleum distillate	40-70%	
Multipurpose Thinner	aromatic petroleum distillate		
	methylene chloride		
Multipurpose Thinner	2-butoxyethanol	10-30%	
	4-hydroxy-4-methyl-2-pentanone	60-100%	
	gamma-butyrolactone	3-7%	
	petroleum distillate	10-30%	

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Eastern Sign Print(cont)	Multipurpose Ink	2-butoxyethanol	3-13%
		4-hydroxy-4-methyl-1,2-pentanone	15-60%
		antimony trioxides	
		butyl benzyl phthalate	1-5%
		ethylene glycol monopropyl ether	10-30%
		gamma-butyrolactone	1-5%
		lead chromate	
		lead sulphate	
		molybdenum compounds	
		petroleum distillate	3-7%
	Varsol	stoddard solvent	100%
	Kwiobond Hardener 930	ethyl acetate	15-35%
		isocyanate	65-85%
	Flat, Satin Poster Wash Up Lacquer Thinner	methyl toluene	100%
		ethyl acetate	5%
		methyl ether ketone	25%
		methyl isobutyl ketone	25%
		n-amyl acetate	5%
		n-butyl alcohol	5%
		petroleum solvent	10%
		propanol-2	5%
		toluene	2%
		xylene	5%
	Screen Ink 99-S	aromatic hydrocarbon	15-25%
		butyrolactone	5-10%
		cyclohexane	15-20%
		ethylene glycol butyl ether acetate	15-20%
	Screen Mesh Degreaser	caustic soda	25%
	Green Filler	alcohols	12.8%
		dichloromethane	82.2%
		butyl acetate	1-7%
	Adhering Thinner	ethyl acetate	20-45%
		heptane	30-55%
isopropyl alcohol		15-35%	
N/A			
Autoprep	alkaline silicate		
Lumilux	dimethyl ketone	40-70%	
Gloss,Matte Vinyl Wash-Up	methyl toluene	40-70%	

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Eastern Sign Print (cont)	Gloss, Matte Vinyl Thinner	2(3H)-furanone, dihydro	3-7%
		aliphatic dibasic acid esters	10-30%
	Satin, Flat Poster Wash Up	petroleum distillate	40-70%
		methyl toluene	60-100%
	Easisolve 5	sodium periodate	
		butyl acetate	1-7%
	Adhereing Thinner	ethyl acetate	20-45%
		heptane	30-55%
	VL Washing Thinner	isopropyl alcohol	15-35%
		methyl ethyl ketone	30%
	Easisolv 201	toluene	70%
		2-(2-(2-methoxypropoxy)propoxy)propanol	
	Screen Ink	aliphatic hydrocarbon	35-45%
		aromatic hydrocarbons	3%
	Matte Vinyl Ink	butyl cellosolve	2%
		mineral spirits	25%
	Satin Poster Ink	3,5,-trimethyl-2-cyclohexene-1-one	10-30%
		antimony trioxide	
	Poster Fluorescent Ink	cyclohexanone	7-13%
		dioctyl phthalate	1-5%
	Azocol Ink Remover	lead chromate	
		lead sulphate	
	Azocol Foto-Prep Degreaser	molybdenum compounds	
		petroleum distillate	10-30%
	Oils	petroleum distillate	10-60%
		petroleum distillate	5-30%
	Solvent	benzyl alcohol	25%
butyl cellosolve acetate		25%	
Flat Poster Transparent Base	cyclohexanone	25%	
	diacetone alcohol	20%	
Satin Poster 4-Color Process	diethylene glycol	3.5%	
	butyl carbitol	100%	
Pregan Paste	petroleum distillate	5-100%	
	2-butoxyethanol	1-5%	
Screen Ink C-28	petroleum distillate	10-60%	
	sodium hydroxide	15-35%	
	mineral spirits	10-15%	

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Eastern Sign Print (cont)	Super Kleen	methylene chloride	63-68%
		perchloroethylene	37-32%
		propylene oxide	0.3%
	Ruby Block	N/A	
	Screen Ink 4200	aromatic hydrocarbon	20-30%
		aromatic hydrocarbon	10-20%
		butyl cellosolve	1%
	Display+Vinyl Ink C-99,C-31	mineral spirits	10-70%
		aromatic hydrocarbon	5-8%
		butyrolactose	6-9%
		cyclohexanose	16-24%
		ethylene glycol butyl ether acetate	13-18%
	Bronte Powder	copper	
		zinc	
Reducer			
Poster Base			
Forsythe Autobody	Centari Acrylic Enamel Paint	VM+P naphtha	1-60%
		acrylic resin	10-30%
		alkyd resin	7-30%
		aluminum flake	0.5-5%
		aromatic hydrocarbon	0.5-10%
		barium sulfate	0.5-1.5%
		bon red pigment	5-10%
		carbon black pigment	0.5-1.5%
		colbalt naphthenate	0.1-5%
		dioxazine carbonzole pigment	0.5-1.5%
		ethylene glycol monobutyl ether acetate	1-5%
		ferric ferrocyanide pigment	3-7%
		indofast violet pigment	1-5%
		iron oxide pigment	3-30%
		lead chromate molybdate pigment	10-30%
		lead chromate pigment	10-30%
		medium mineral spirits	0.1-10%
		methyl ethyl ketone	1-30%
		monoazo pigment	1-5%
		n-butyl acetate	0.5-30%
perylene pigment	3-7%		
phthalocy anine blue pigment	1-5%		

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)	
Forsythe Autobody(cont)	Centari Acrylic Enamel (cont)	phthalocyanine green pigment	1-5%	
		primary amyl acetate	0.5-1.5%	
		propylene glycol monomethyl ether acetate	0.1-10%	
		quinacridone pigment	1-7%	
		tetrachloroisosolinone yellow	1-5%	
		thio fast red	1-5%	
		titanium dioxide	1-30%	
		toluene	1-30%	
		xylene	1-60%	
		Dupont Primer	acetone	5-10%
			carbon black pigment	1-5%
			castor oil	1-5%
			dibutyl phthalate	0.5-5%
	ester gum		5-10%	
	hydrous magnesium silicate		10-30%	
	iron oxide		1-10%	
	isopropanol		7-13%	
	methyl ethyl ketone		1-7%	
	methyl isobutyl ketone		1-7%	
	nitrocellulose		5-10%	
	titanium dioxide		0.5-10%	
	toluene		10-30%	
	Dupont Thinner		2,2,4 trimethyl 1,3 pentanediol monoisobutyrate	3-7%
		VM+P naphtha	15-60%	
		acetone	5-30%	
		diisobutyl ketone	3-7%	
		ethyl acetate	7-30%	
		ethylene glycol monobutyl ether acetate	1-5%	
		methyl ethyl ketone	7-13%	
		n-butyl acetate	5-10%	
		toluene	1-30%	
		Dupont Hardener	acetic acid	7-13%
	aluminum chloride		30-60%	
	Dupont Reducer	2,2,4 trimethyl 1,3 pentanediol monoisobutyrate	3-7%	
		VM+P naphtha	15-40%	
		acetone	10-30%	
		ethyl acetate	10-30%	
toluene		10-30%		

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Ivor MacDonald Rink	Freon 22	CFC 22	100%
Joe Arnold's Service	Oil	petroleum middistillate	100%
	Grease Keroscene	hydrotreated distillate	100%
John Palmer Autobody	Centari Acrylic Enamel Paint	VH+P naphtha acrylic resin alkyd resin aluminum flake aromatic hydrocarbon barium sulfate bon red pigment carbon black pigment cobalt naphthenate dioxazine carbonzole pigment ethylene glycol monobutyl ether acetate ferric ferrocyanide pigment indofast violet pigment iron oxide pigment lead chromate molybdate pigment lead chromate pigment medium mineral spirits methyl ethyl ketone monoazo pigment n-butyl acetate perylene pigment phthalocy anine blue pigment phthalocy anine green pigment primary anyl acetate propylene glycol monoethyl ether acetate quinacridone pigment tetrachloroisonsolinone yellow thio fast red titanium dioxide toluene xylene	1-60% 10-30% 7-30% 0.5-5% 0.5-10% 0.5-1.5% 5-10% 0.5-1.5% 0.1-5% 0.5-1.5% 1-5% 3-7% 1-5% 3-30% 10-30% 10-30% 0.1-10% 1-30% 1-5% 0.5-30% 3-7% 1-5% 1-5% 0.5-1.5% 0.1-10% 1-7% 1-5% 1-5% 1-30% 1-30% 1-60%



Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Joe Palmer Autobody(cont)	Dupont Reducer	2,2,4 trimethyl 1,3 pentane- diol monoisobutyrate	3-7%
		VM+P naphtha	15-40%
		acetone	10-30%
		ethyl acetate	10-30%
	Dupont Thinner	toluene	10-30%
		2,2,4 trimethyl 1,3 pentane- diol monoisobutyrate	3-7%
		VM+P naphtha	15-60%
		acetone	5-30%
		diisobutyl ketone	3-7%
		ethyl acetate	7-30%
		ethylene glycol monobutyl ether acetate	1-5%
		methyl ethyl ketone	7-13%
		n-butyl acetate	5-10%
		toluene	1-30%
	Dupont Primer	acetone	5-10%
		carbon black pigment	1-5%
		castor oil	1-5%
		dibutyl phthalate	0.5-5%
		ester gum	5-10%
		hydrous magnesium silicate	10-30%
iron oxide		1-10%	
methyl ethyl ketone		1-7%	
methyl isobutyl ketone		1-7%	
nitrocellulose		5-10%	
Body Gold Plastic Filler	titanium	0.5-10%	
	toluene	10-30%	
Dupont Hardener	acetic acid	7-13%	
	aluminum chloride	30-60%	
K.Langille Auto Sales	Waste Oil	petroleum middistillate	100%
Kelderman Concrete	Darex II AEA	fatty acid salts	10%
		potassium hydroxide	1%
		sodium hydroxide	1%
	Daratard 17 WRDA-82	formaldehyde	1%
		formaldehyde	1%
		triethanolamine	6%

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Kelderman Concrete (cont)	Recover	formaldehyde	0.02%
	WRDA-19		
	Calcium Chloride	calcium chloride	100%
	Acid Concrete Cleaner	hydrogen chloride	10-30%
Kevin's Service Center	Waste Oil	petroleum middistillate	100%
Linmac Industrial Ltd.	Industrial Cleaner 200	1,1,1-trichloroethane	90-100%
		1,4-dioxide	1-5%
		d-limonine	5-10%
	Cleaner Blend 300	propylene glycol monomethyl-ether	30-60%
		propylene glycol monomethyl-ether acetone	10-30%
	Aerosol Blue	4-hydroxy-4-methyl-2-pentanone	1-5%
		CDA-19 alcohol	31-50%
		butyl acetate	11-30%
		cellulose nitrate	1-5%
		normal butyl alcohol	10%
		propane/isobutane	11-30%
		white shellac	1-5%
		CDA-19 alcohol	51-70%
		butyl acetate	11-30%
		propane/isobutane	11-30%
	Removers/Thinners	carbon dioxide propellant	2-3%
		d-limonene	50-70%
		solvent naphtha medium aliphatic	30-50%
	LPS Heavy Duty Silicone Lube	aliphate petroleum hydrocarbon	10-30%
		dimethyl polysiloxane	5-10%
propane/isobutane		10-30%	
LPS Chain Mate	1,1,1-trichloroethane	50-60%	
	hydrotreated petroleum oil	30-40%	
	isobutane/propane	10-30%	
	molybdenum disulfide	1-2%	
	biodegradable surfactants	6-10%	
	dipropylene glycol methyl ether	5-8%	
	sodium metasilicate	3-5%	
LPS Precision Clean	tetrapotassium pyrophosphate	2-4%	

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Linnac Industrial (cont)	CFC Free Electro Contact Cleaner	carbon dioxide	2-4%
		isohexane	70-90%
	LPS 1 Greaseless Lube	isopropyl alcohol	5-20%
		n-hexane	2-3%
		aliphatic petroleum hydrocarbon	70-80%
	LPS 2 General Purpose Lube	aliphatic petroleum naphtha	20-30%
		carbon dioxide propellant	2-3%
		non-hazardous proprietary blend	3-5%
		aliphatic petroleum hydrocarbon	50-70%
	LPS 3 Heavy Duty Rust Inhibit.	carbon dioxide propellant	2-3%
		non-hazardous blend	10-20%
		petroleum oil	10-20%
		aliphatic petroleum hydrocarbon	70-80%
carbon dioxide propellant		2-3%	
LPS CO3128#3	dipropylene glycol methyl ether	2-3%	
	non hazardous blend	10-20%	
	petroleum oil	10-15%	
MacCulloch Truck Service	Kerosene	hydrotreated distillate	100%
		light distillate-hydro treated	100%
	IRSOL Diesel Coolant	diethylene glycol	5%
		monoethylene glycol	90%
		sodium tetraboratex pentahydrate	1%
		Everflow	diethylene glycol
	Methal Hydrate	monoethylene glycol	90%
		methanol	99.8%
	Gasoline De-Icer	methanol	99.8%
	Pin Brushing Grease	N/A	
	Lubex EP2	N/A	
	Transflow	mineral oil	90%
		naphthalene	1%
		Windshield Wash	methanol
	Summer Windshield Wash	methanol	39.2%
	Fg-2	propane	1-5%
Acetylene	acetylene	100%	

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
MacCulloch Truck (cont)	Oxygen	oxygen	100%
	Universal 10		
	Universal 50		
	Velco HD 30		
	Stalube Winter		
	Max-1 10W30		
	Advant		
	TR Hydraulic		
	Universal 40		
	Hydraulic 46		
	Break Cleaner		
	Thread Sealant with Teflon		
	Clear RTV Silicon Rubber Adhes		
	High Trac Spray a Gasket		
	Super Bonder Adhesive		
	Gasket Remover		
	Blue RTV Foam a Gasket		
	Battery Acid		
	Battery Fluid		
	Starting Fluid		
	Wheel Bearing Grease		
	Seal All		
	Penetrating Oil		
	Hydraulic Fluid		
	Air Break Antifreeze		
	Thread Locker		
	Form a Gasket #2		
	Ultra Copper High Temp RTV Sil		
	PST Pipe Sealant with Teflon		
	Air Break Conditioner		
	Diesel Antigal		
	Diesel Water Remover		
	Silicon Conditioner		
	Hi Temp. Antiseize Compound		
	Propane 20		
	Gleem All		
	5 Minute Epoxy		
	Pen o Plate		
	Eas-Off		
	Lubricant		
	Spray 9		
	Silicon		

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
MacCulloch Truck (cont)	Adhesive		
	Viscotene		
	Silicon Lube		
	Antiseize		
	Carb Cleaner		
	Freon 22		
	Velco Dexcon II		
	Hydraulic 68		
	100 Premium 15W40		
	Winter Vision Plus		
	Velco 10 40		
	Velco Triple 10		
	Hydraulic 32 B		
	Universal 30		
	Premixed Antifreeze		
	HDE 80W90		
	Universal 15W40		
	HYDLP 58 B		
AF-EP 2			
Universal 20			
Hydraulic 32			
HDE 85W140			
Hydraulic 100			
MacDonald Industrial	IRSOL 616-C	light distillate-hydro treated	100%
		2-butoxy ethanol	4-8%
	Act-Tak	caustic soda	8-12%
		monoethanolamine	1-4%
		polyethylene glyco ether	1-4%
		sodium silicate	1-4%
		sodium tripolyphosphate	12-16%
		trisodium phosphate	8-12%
		1,1,1-trichlorethane	35-50%
		hydrocarbon propellant	20-50%
Guardian Wetting Agent	napha (nonylphenyl)	50%	
	polyoxy-1,2-ethanediyl		
McLean's Auto Salvage	Engine Oil	petroleum distillate	100%
	Auto Transmission Fluid		

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Michelin Tires (Canada)	Aluminum	aluminum	
	Cast Iron/Steel	cast iron/steel	
	Caustic Soda	sodium hydroxide	9-60 %
	Amine	amine	
	Guanidine	guanidine	
	Thiazole	thiazole	
	Thiuram	thiuram	
	Sulphuric Acid	sulphuric acid	60-100 %
	Phenylenediamine	phenylenediamine	
	Quinolin	quinolin	
	Cobalt Resinate	cobalt resinate	
	Butyl Rubber	butyl rubber	
	Natural Rubber	natural rubber	
	Synthetic Rubber	synthetic rubber	
	Neoprene	neoprene	
	Ester	ester	
	Aromatic oil	aromatic oil	
	Naphthenic Oil	naphthenic oil	
	Paraffinic Oil	paraffinic oil	
	Carbon Black	carbon black	
	Amorphous Silica	amorphous silica	
	Talc	talc	
	Rubber Cement	rubber cement	
	Wax	wax	
	Resin	resin	
	Alkyl Phenol Disulphide	alkyl phenol disulphide	
	Sternic Acid	sternic acid	
	Sulphur	sulphur	
	Zinc	zinc	
	Hypochlorite Solution	hypochlorite solution	
Polyaluminu Chloride	polyaluminu chloride		
Polyphosphate	polyphosphate		
Dispersant	dispersant		
Neutralizing Amine	neutralizing amine		
Softener	softener		
Petroleum Naptha	hydrocarbon mixture	99 %	
Asbestos	asbestos		

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Pictou Community College	Waste Oil	petroleum middistillate	100%
Perry's Autobody	Centari Acrylic Enamel Paint	VH+P naphtha	1-60%
		acrylic resin	10-30%
		alkyd resin	7-30%
		aluminum flake	0.5-5%
		aromatic hydrocarbons	0.5-10%
		barium sulfate	0.5-1.5%
		bon red pigment	5-10%
		carbon black pigment	0.5-1.5%
		cobalt naphthenate	0.1-5%
		dioxazine carbonzole pigment	0.5-1.5%
		ethylene glycol monobutyl ether acetate	1-5%
		ferric ferrocyanide pigment	3-7%
		indofast violet pigment	1-5%
		iron oxide pigment	3-30%
		lead chromate molybdate pigment	10-30%
		lead chromate pigment	10-30%
		medium mineral spirits	0.1-10%
		methyl ethyl ketone	1-30%
		monoazo pigment	1-5%
		n-butyl acetate	0.5-30%
		perylene pigment	3-7%
		phthalocy anine blue pigment	1-5%
		phthalocy anine green pigment	1-5%
		primary amyl acetate	0.5-1.5%
		propylene glycol monomethyl ether acetate	0.1-10%
		quinacridone pigment	1-7%
		tetrachloroisosolinone yellow	1-5%
		thio fast red	1-5%
		titanium dioxide	1-30%
		toluene	1-30%
		xylene	10-60%
	Dupont Thinner	2,2,4 trimethyl 1,3 pentane-diol monoisobutyrate	3-7%
		VH+P naphtha	15-60%
		acetone	5-30%
		diisobutyl ketone	3-7%

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Perry's Autobody (cont)	Dupont thinner (cont)	ethyl acetate	7-30%
		ethylene glycol monobutyl ether acetate	1-5%
		methyl ethyl ketone	7-13%
	Dupont Reducer	n-butyl acetate	5-10%
		toluene	1-30%
		2,2,4 trimethyl 1,3 pentane-diol monoisobutyrate	3-7%
		VM+P naphtha	15-40%
		acetone	10-30%
		ethyl acetate	10-30%
		toluene	10-30%
	Polyester Body Fillers		
	Dupont Hardener	acetic acid	7-13%
		aluminum chloride	30-60%
Pictou Co. Solid Waste Management	Poly Aluminum	poly aluminum	
Pictou District School Board	909 Heavy Duty Sweep Compound	N/A	
	#501 Window Clean	N/A	
	#1111 Drain Kleen	sulphuric acid	90-100%
	#815 Javel 5	sodium hydroxide	1-5%
		sodium hypochlorite	1-5%
	Resolve	ethylene glycol monobutyl-ether	1-5%
		trisodium phosphate	1-5%
		ethylene glycol monobutyl-ether	5%
	Pail of Power	ethylene glycol monobutyl-ether	5%
	Snap Back Restorer #779	diethylene glycol monoethyl-ether	1.3%
		mineral spirits	2.7%
	Appearance Cleaner #1995	N/A	
	Appearance Stripper #1996	ethylene glycol butyl ether	7.5%
		monoethanolamine	7.5%
		sodium hydroxide	1%
Appearance Sealer/Finish #1998	dibutyl phthalate	2%	
	diethylene glycol monoethyl-ether	4%	
Aerosol Furniture Spray/Polish	aliphatic hydrocarbon	1-5%	
	hydrocarbon propellant	3-7%	
Germicidal Bowl Cleaner	hydrochloric acid	10-30%	



Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Pictou District School Board (cont)	Medallion Liquid Carpet Cleaner	inorganic silicates	1-5%
	Stainless Steel Cleaner	sodium nitrilotetracetate	0.1-1.0%
		1,1,1 trichloroethane	15-40%
	1424 Bacteriostatic Dust Absorb	2-butoxyethanol	5-10%
		hydrocarbon propellant	10-30%
		mineral seal oil	14-40%
		2,4,4-trichloro-2-hydroxy-diphenyl ether	0.1%
		aliphatic hydrocarbon oil	60-100%
	Hand Soap	N/A	
	Total Cleaner and Polish	2-butoxyethanol	1-5%
		pine oil	1-5%
	1492 Germicidal Detergent	benzalkonium chloride	5%
		sodium nitrilotriacetate	1%
		paradichlorobenzene	95%
	Bon Air Freshener	acetic acid	100%
	Acetic Acid, Glacial	sodium carbonate	3-12%
		sodium dodecyl benzene-sulfonate	3-12%
	Star Ban O Liquid Detergent	isopropyl alcohol blend	50-60%
		polyethylene glycol ether	1-4%
		polyethylene glycol ether	1-5%
	Leminee 23 Cleaner	quaternary DMBAC 50%	1-5%
		sodium carbonate	1-5%
		hydrochloric acid	20-30%
	Liq. Bowl & Urinal Clean 1110	polyethylene glycol ether	1-4%
		2,2,4 trimethyl 1,3 pentane-diol monoisobutyrate	3-7%
	Dupont Thinner	VM+P naphtha	15-60%
		acetone	5-30%
diisobutyl ketone		3-7%	
ethyl acetate		7-30%	
ethylene glycol monobutyl ether acetate		1-5%	
methyl ethyl ketone		7-13%	
n-butyl acetate		5-10%	
toluene		1-30%	

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Pictou District School Board (cont)	Sunlight	alcohol C12-15 ethoxylated	1-5%
		sodium alkyl C10-16 aryl-sulphonate	7-13%
		sodium carbonate	15-40%
	Old Dutch Cleanser	sodium silicate	7-13%
		trisodium nitrilotriacetate	10-30%
		silica	60-100%
		sodium carbonate	3-6%
	Deodorant Block Fantastic Spray A#707 Pinetest Airex/15 Disinfectant Cleaner Chalkboard Cleaner Laundry Detergent Trouble Shooter CLR Cleaner	sodium dodecyl benzene-sulfonate	1-5%
Pictou Fisheries Training Pool	DPD Reagent #1	potassium phosphate	10%
		sodium hydroxide	1%
		sodium phosphate	10%
	DPD Reagent #2	n,n-diethyl-p-phenylene-diamine oxalate	1%
		organic acid	10%
	DPD Reagent #3	potassium iodide	20%
		sodium carbonate	1%
	BDR Reagent #6	sodium carbonate	1%
		sulphuric acid	1%
	Sulphuric Acid #9	calcon	1%
		isopropyl alcohol	25%
	Calcium Indicator Liquid	triethanolamine	50%
		calcium chloride	77%
Flake Calcium Chloride Super Sequa Sol Oxy-Brite Scrub-EZE	N/A		
	N/A		
	2-(2-butoxyethoxy)-ethanol	5-10%	
	citric acid	5-10%	
	phosphoric acid	10-30%	
Filter Cleanser	N/A		

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Pictou Fisheries Training Pool (cont)	Dynakil Plus Detergent	benzalkonium chloride	10-30%
	pH Indicator Solution	phenolsulfonphthalien	1%
		sodium hydroxide	1%
	Sodium Hypochlorite Muriatic Acid	sodium hypochlorite muriatic acid	100%
Pictou Golf & Country Club	Killlex	2,4-dichlorophenoxyacetic Acid	9.6%
		MCPP mixed isomers	3.7%
		dicamba	0.5%
	Daconil 2787	tetrachloroisophthalonitrite	
	Royal Fertilizer 20-20-20 Fertilizer 25-5-10 Humate Milorganite		
	Waste Oil	petroleum distillates	100%
	Pictou Lodge Resort	Tide Diazanon Javex	sodium hydroxide sodium hypochlorite
Pentox			
Pictou Waterfront Development Corp.			
Quality Cleaners	Donovan Chem Break Donovan Chem Detergent Donovan Chem Soft Donovan Chem Bleach Donovan Chem Neutralizer		
	Liqua Sour Fer	hydrofluoric acid	15-40%
	Liqua Soft	quaternary dialkyl ammonium chloride	10-30%
	Liqua Chlor	sodium hypochlorite	60-100%
		alkylphenoxypolyethoxyethanol	3-7%
	Liqua Suds	caustic potash	1-5%
		ethoxylated fatty alcohol	3-7%
	Liqua Alk	caustic soda	40-70%
		polyacrylates	7-13%
	Sizing 8851 Soap 8890 Detergent 7501		

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)	
Quality Cleaners (cont)	Soap 8878			
	Aquadol			
	Proteen			
	Trik			
	Wetkleen			
	Prespotter 8837			
	POB			
	Picrin			
	Yello Go			
	Eliminink			
	Erusticator	ammonium bifluoride	25%	
		hydrofluoric acid	10%	
	Dowper	tetrachloroethylene	99.9%	
Scotsburn Dairy Group	Pennchem 91M	sodium hydroxide	60-100%	
	MC-3			
	Liquid Brykleen			
	Duo-Kleen			
	BK-Powder	calcium hypochlorite	60-100%	
	Pennwalt AD40	sodium gluconate	15-40%	
		sodium hydroxide	60-100%	
	Liqua Terg	clindrol (Grotan BK)	1-5%	
		linear alkylaryl sulfonate	10-30%	
		wetting agent	1-5%	
	Pennlube 300	EDTA salt	5-10%	
		ethoxylated alcohol sulfate	1-5%	
		grotan BK	1%	
		isopropanol	1-5%	
	Stericide Sanitizer	ammonium compound, quaternary	10-30%	
		Steri-Gel	BTC2125M	1%
			hydroxyethyl cellulose	1-5%
	PC-500	pine oil	1%	
		DPM	1-5%	
potassium hydroxide		10-30%		
Clorclean (Liquid) Plus	caustic potash	30-60%		
	sodium hypochlorite	10-30%		
Exalt II	nitric acid	15-45%		
	phosphoric acid	10-30%		
GQ1	caustic soda	30-60%		
DFT-171	acetic acid	1-5%		
	anionic wetting agent	7-13%		
	phosphoric acid	30-60%		

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)		
Scotsburn Dairy Group (cont)	MC-9	amine oxide	1-5%		
		dichloro-isocyanurate	3-7%		
		linear alkyl aryl sulfonate	3-7%		
		sodium carbonate	10-30%		
	Sterifoam BK-BK BIO-K	ammonium compound, quaternary	10-30%		
		IGEPAL-CO-850	3-7%		
		IODE (non-ionic base)	10-30%		
	Sodium Hypochlorite	phosphoric acid	10-30%		
		sodium hypochlorite			
	Scott Maritimes Ltd.	Chlorine Dioxide Salt Cake Lime Rock	chlorine dioxide	100%	
sodium sulphate					
calcium carbonate			varies		
Pebbled Lime Oxygen Caustic Soda Liquid Liquid Chlorine Sodium Chlorate Sulphuric Acid Hydrogen Peroxide Fleetcol 9193 Defoamer  Talc Methanol Carbon Dioxide (liquid) Sodium Chloride		calcium hydroxide	varies		
		calcium oxide	varies		
		calcium oxide	90%		
		oxygen	100%		
		sodium hydroxide	9-60%		
		chlorine	100%		
		sodium chlorate	99-100%		
		sulphuric acid	60-100%		
		hydrogen peroxide	50%		
		petroleum hydrocarbons	85%		
		silicon dioxide	2%		
		talc			
		methanol	99-100%		
		carbon dioxide	100%		
		sodium chloride	100%		
		Sigi's Auto Service	Gasoline	benzene	1-5%
				cyclohexane	1-5%
n-hexane	1-5%				
toluene	10-30%				
xylene	10-30%				
petroleum middistillate	100%				
Waste Oil					
Sponagle Transmission	Dexron Auto Transmission Fluid Furnace Oil Naphtha Petroleum	petroleum middistillate	100%		
		hydrocarbon mixture	99%		

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Standard Auto Glass	Urethane Varsol	stoddard solvent	100%
Stuff 'N Fluff	Detergent, Non-Phosphate Liquid Bleach	sodium hypochlorite	
Summer Street Industries	Paint and Varnish Stripper	dichloromethane methanol methylene chloride	
	Pro Clear Finish Gloss	mineral spirits (stoddard solvent)	60%
	Scrape Off Paint Remover	dichloromethane hydroxypropyl methylcellulose methyl alcohol toluene	85% 5% 10% 5%
	Crew Super Blue Bowl Cleaner	dodecylbenzene sulfonic acid noryphenol ethoxylate oxalic acid	1-3% 3-6% 1-3%
Superior Propane	Glidden Air Dry Enamel #4580 Methanol	methanol	
Sutherland Harris Memorial Hospital	Tec Wash III Detergent Castle Tec-San Sanitizer	potassium metasilicates sodium hydroxide sodium hypochlorite	20% 0.5% 5-6%
	Schedule 7 Chamber Cleaner	citric acid phosphoric acid polypropoxyethanol	15% 15% 15%
	Aura	chlorinated trisodium phosphate tetrasodium pyrophosphate	65-75% 5%
	Cold Spor	glutaraldehyde ortho-phenylphenol p-tert-nylphenol oxalic acid	10% 0.5% 0.1% 0.1%
	Pry Metrizyme Enzymatic Detergent Christal Type R Developer	N/A 1-phenyl-3-pyrazolidinone acetic acid glutaraldehyde hydroquinone potassium hydroxide potassium sulfite	 5-10% 50-70% 20-30% 5-10% 1-5% 10-30%

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)	
Sutherland Harris Memorial Hospital (cont)	Christal Type X Fixer	acetic acid	5-10%	
		aluminum sulfate	40-70%	
		ammonium thiosulfate	30-60%	
		sodium sulfite	5-10%	
		Christal Developer Cleaner		
		Christal Fixer Cleaner		
		XRS Starter		
		D-Scaler	nitric acid	10-30%
			phosphoric acid	10-30%
		Divophor	citric acid	1-5%
			iodine	1-5%
			isopropanol	1-5%
			phosphoric acid	1-5%
			DRX Germicidal Detergent	ethyl alcohol
			methyl alcohol	1.0%
			sodium o-benzyl-p-chloro-phenate	1.7%
			sodium o-phenolphenate	3.4%
			tetrasodium ethylene diamine-tetraacetate	1.6%
		Hydropowder	polyoxypropylene ethylene polymer	1-5%
			sodium hydroxide	10-30%
			sodium nitrilotriacetate	10-30%
			sodium tripolyphosphate	15-30%
		Liqua Alk	caustic soda	40-70%
	polyacrylates		7-13%	
	Liqua Chlor	sodium hypochlorite	60-100%	
	Liqua Suds	alkylphenoxyethoxyethanol	3-7%	
		caustic potash	1-5%	
		ethoxylated fatty alcohol	3-7%	
	Liqua Sour Fer	hydrofluoric acid	15-40%	
	Liqua Soft	quaternary dialkyl ammonium chloride	10-30%	
	Omnipak Dry	N/A		
	A-500 Dry	quaternary ammonium chloride	15%	
	Soda Bleach	sodium hypochlorite	100%	
	BMD Enzyme Cleaner	N/A		
	Liquid Descaler	glycolic acid	3%	
		phosphoric acid	50%	

Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)
Sutherland Harris Memorial Hospital (cont)	Grill Cleaner	sodium dodecyl benzene-sulfonate	1-5%
		sodium hydroxide	10-30%
	Pink Orchid	ammonium lauryl ether sulfate	3-7%
		coco diethanolamide	7-13%
		sodium dodecylbenzene-sulfonate	10-30%
		didecyl dimethyl ammonium chloride	1.4%
	Quavo Plus	dioctyl dimethyl ammonium chloride	1.4%
		ethanol	1.1%
		octyl decyl dimethyl ammonium chloride	2.8%
		propylene glycol	
	Surg-I-Kleen	sodium carbonate	
		sodium hexametaphosphate	
		sodium lauryl sulphate	
		sodium nitrite	
		tetrasodium pyrophosphate	
Comet	linear alkylbenzene sulphonate	1-5%	
	silicon dioxide	60-100%	
	sodium carbonate	5-10%	
	tetrasodium pyrophosphate	3-7%	
Torpedo Drain Opener	sulfuric acid	90-100%	
	paraffinic hydrocarbons	60-100%	
Hygo	polymer		
	polyoxypropylene oxyethylene	7-13%	
Zero Spot	bardac 208M	5.5%	
Tub Cleanser			
	Ice Off Plus	N/A	
T & W Auto Centre Ltd	Waste Oil	petroleum middistillate	100%
Town of New Glasgow	Chlorine	chlorine	100%
	Caustic Soda	sodium hydroxide	9-60%
	Hydrofluosilic Acid		
	Sodium Fluoride Granular	sodium fluoride	100%



Appendix 2. Products used and chemical composition for Pictou Region. Component information derived from Material Safety Data Sheets.

Company	Product	Component	Composition (percent)	
Town of Stellarton	Alum			
	Sodium Hydroxide	sodium hydroxide	100%	
	Polymer			
	Limestone Dust			
	Chlorine	chlorine		
	Ammonia	ammonia		
	Road Salt	sodium chloride		
Trenton Rink	Waste Oil	petroleum middistillate	100%	
	CFC22	CFC22		
Warren Maritime Ltd.	Calcium Chloride	calcium chloride	100%	
	Everflow	diethylene glycol	2-5%	
		monoethylene glycol	90%	
	Diesel Fuel	petroleum middistillate	100%	
	Gasoline	benzene	1-5%	
		cyclohexane	1-5%	
		n-hexane	1-5%	
		toluene	10-30%	
		xylene	10-30%	
		Furnace Oil	petroleum middistillate	100%
		Asphalt	petroleum asphalt	100%
	Lube Oil			
	Grease			
	Engine Oil	petroleum middistillate	100%	
Releez	methyl laurate			
	methyl myristate			
	methyl oleate			
	methyl palmitate			
	methyl stearate			
Wayne's Refrigeration	CFC12	CFC12		
	CFC22	CFC22		
	R502	R502		
	Refrigerant Oil	refrigerant oil		

