## 4. POSSIBLE EXPOSURE TO LEAD IN TAILINGS FROM KINGDON MINE SITE, WEST CARLETON

**COMMITTEE RECOMMENDATION**

**That Council receive this report for information.**

DOCUMENTATION

1. Associate Medical Officer of Health report dated 17 Jan 00 is immediately attached.

REGION OF OTTAWA-CARLETON | REPORT
RÉGION D'OTTAWA-CARLETON | RAPPORT

Our File/N/Réf.
Your File/V/Réf. RC

DATE 17 January 2000

TO/DEST. Coordinator,
Community Services Committee

FROM/EXP. Dr. Edward Ellis,
Associate Medical Officer of Health

SUBJECT/OBJET **POSSIBLE EXPOSURE TO LEAD IN TAILINGS FROM KINGDON MINE SITE, WEST CARLETON**

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## DEPARTMENTAL RECOMMENDATION

**That Community Services Committee recommend Council receive this report for information.**

## BACKGROUND

Enclosed, please find information related to possible exposure to lead in tailings from Kingdon Mine site near Galetta in the Township of West Carleton, (Annexes A and B). This information is being distributed to residents in the area (see attached map), primary schools serving the area, child care facilities in the area, hospitals and various physicians in Ottawa-Carleton, Almonte and Arnprior, various government offices and other interested persons.

While there is no current evidence of a human health problem, we need to be cautious and investigate to see if there is one. The symptoms and signs of elevated body lead can be non-specific. Blood lead testing is the best method to assess the situation. Results of the screening program and on-going investigation by the Ontario Ministry of the Environment will be reported to Community Services Committee as available.

PUBLIC CONSULTATION

The Health Department worked with relevant organizations in the initial investigation of the issue and planning of the lead screening clinics. It would be useful for the Ministry of Environment, Region of Ottawa-Carleton, Township of West Carleton, Mississippi Valley Conservation, local community groups and other interested parties to form a Community Liaison Committee following the public meeting on January 24, 2000.

FINANCIAL IMPLICATIONS

It is too early to determine the total cost of the screening program. If the approved Health Department budget cannot accommodate expenses, a request for supplemental funding from the Region's contingency account will be made.

*Approved by Dr. Robert Cushman*

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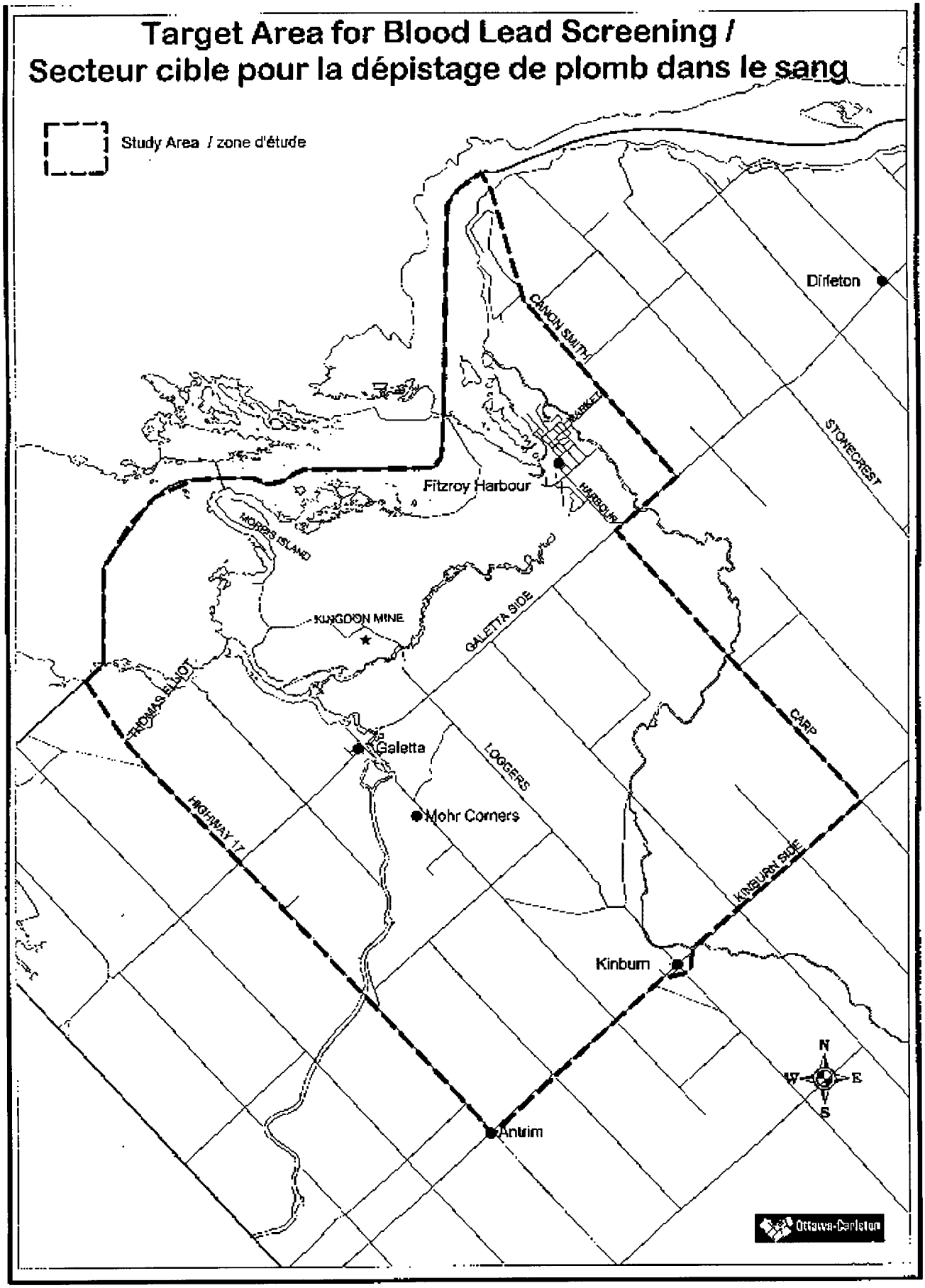
Target Area for Blood Lead Screening /
Secteur cible pour la dépistage de plomb dans le sang
Study Area / zone d'étude
Dirleton
CANON SMITH
STONECREST
Fitzroy Harbour
HARBOUR
MORRIS ISLAND
KINGOON MINE
GALETTA SIDE
THOMAS ELLIOT
Galetta
LOGGERS
CARP
Mohr Corners
HIGHWAY 17
KINBURN SIDE
Kinburn
Antrim
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Ottawa-Carleton

**Region of Ottawa-Carleton**
Health Department
495 Richmond Road
Ottawa, Ontario K2A 4A4

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**ANNEX A**

17 January 2000

# IMPORTANT NOTICE TO RESIDENTS AND FREQUENT VISITORS TO MORRIS ISLAND, GALETTA, FITZROY HARBOUR, KINBURN AND AREA

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## Possible exposure to lead in tailings from Kingdon Mine site.

The Kingdon Mine, near Galetta in the Township of West Carleton, stopped mining for lead, zinc and other minerals in 1931. Since the mine closed, rock tailings left over from the mining process have been used for local driveways, roads, fill and landscaping. Recent testing shows the tailings have a high lead content.

People may become exposed to lead from these tailings due to the widespread off-site use of this material. The main way people would be exposed is through ingestion of dust. Young children are more likely to swallow soil and dust because of their tendency to put their hands and objects into their mouths. Children under 7 are also most susceptible to health problems from long-term exposure to lead. They absorb lead from their stomach and intestine more readily than others and their tissues are in a stage of rapid development. Pregnant women are also of special concern because of the developing fetus.

Exposure to elevated levels of lead can cause higher than average blood lead levels. Higher blood lead levels may lead to premature delivery, reduced birth weight, slower development, reduced IQ, attention problems, anemia and impaired growth, speech and hearing. There may be signs of fatigue and abdominal discomfort, although they are usually due to some other cause. If blood lead levels continue to rise, general fatigue, irritability, difficulty concentrating, tremors, headaches, abdominal pain, vomiting, weight loss or constipation may occur.

In order to learn if the tailings have resulted in significant lead exposure and if they are a risk to health, the Region of Ottawa-Carleton Health Department **strongly recommends a blood lead screening test for ALL children under age 7 and ALL pregnant women living or frequently spending time in the area shown on the attached map**. The area is bordered by the Ottawa River, Thomas Elliot Road, Provincial Highway 17, Kinburn Side Road (Regional Road 20) including the village of Kinburn, Carp Road (Regional Road 5), Galetta Side Road (between Carp Road and Canon Smith Road) and Canon Smith Road. Examples of frequently spending time include child care arrangements, school or regularly visiting family and friends during the past year. Recreational users of Morris Island Conservation Area and Fitzroy Provincial Park are not at risk.

- **Lead Clinic sessions for area children under age 7 and pregnant women:**

Township of West Carleton Municipal Offices, 5670 Carp Road, Kinburn

Wednesday, January 19, 2000 from 9 a.m. to 8 p.m.
Thursday, January 20, 2000 from 9 a.m. to 8 p.m.
Friday, January 21, 2000 from 9 a.m. to 8 p.m.
Saturday, January 22, 2000 from 9 a.m. to 8 p.m.

- **Lead Clinic sessions for area children under age 7 and pregnant women not yet tested AND for other persons living or frequently spending time in the area if they have been regularly exposed to dust from the tailings:**

Township of West Carleton Municipal Offices, 5670 Carp Road, Kinburn

Friday, January 28, 2000 from 9 a.m. to 8 p.m.
Saturday, January 29, 2000 from 9 a.m. to 8 p.m.
Monday, January 31, 2000 from 9 a.m. to 8 p.m.
Tuesday, February 1, 2000 from 9 a.m. to 8 p.m.

Please note that appointments are required in order to screen as efficiently as possible and keep waiting time to a minimum. **Appointments may be made by calling the Lead Hot Line at (613) 724-4222 on January 17-18 from 8:30 a.m. to 10 p.m. and on January 19-31 from 8:30 a.m. to 9 p.m. except for Sundays.** Messages left after hours will be returned the next day.

The test consists of a simple finger (or heel for babies) prick by a Public Health Nurse to obtain a small sample of blood. Persons screened or their parent/guardian will be asked to complete a questionnaire on possible exposure to mine tailings. Health Department staff will be present to answer questions about lead and the environment.

If anyone's screening test result is high, further medical assessment and treatment (if necessary) will be available at CHEO (Children's Hospital of Eastern Ontario), which has experience in dealing with high blood lead. A Public Health Inspector will offer to make a home visit to look for all possible sources of lead, test drinking water if necessary, arrange for testing of tailings used on the property or nearby and provide information on how to reduce future exposure to lead.

**Blood lead screening tests should be done at the Lead Clinic**. If you wish to consult your personal physician before attending the clinic, please share this Notice with him/her. With your consent, results of tests will be sent to personal physicians without delay.

Different labs use different methods to determine blood lead. While they are all satisfactory for individual patient care, we cannot easily take the results from several laboratories and do a proper statistical comparison with blood lead survey data from elsewhere in Ontario. It is with this comparison that we expect to learn whether the mine tailings are a health risk to people in the area. We will use the Public Health Lab in Toronto for the lead screening tests as it has the experience and capacity to do large numbers of tests quickly.

If you live outside the area shown on the map and can demonstrate reasonable proof that you or your children have been regularly exposed to dust from Kingdon Mine tailings found outside the area shown on the map, please call the Lead Hot Line at (613) 724-4222 for advice on where to get blood lead screening.

There will be a **PUBLIC MEETING on MONDAY, JANUARY 24, 2000, 7:30 p.m.-9:30 p.m. at the Township of West Carleton Municipal Offices, 5670 Carp Road, Kinburn**. Representatives of the Region of Ottawa-Carleton Health Department, Ontario Ministry of the Environment, Mississippi Valley Conservation, Township of West Carleton and others will provide a summary and answer questions about the background, work done to date and planned future action.

Thank you very much for your attention to this important matter. For further information, please refer to the attached *Backgrounder on Lead in West Carleton.* This notice and the *Backgrounder* may be viewed on the internet at **www.rmoc.on.ca/healthsante/.** If you have other questions or concerns, please call the Lead Hot Line at **(613) 724-4222**.

Edward Ellis, MD, MPH, FRCPC
Associate Medical Officer of Health

*Disponible en français: (613) 724-4222*

**Region of Ottawa-Carleton**
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**ANNEX B**

17 January 2000 *Disponible en français*

# BACKGROUNDER ON LEAD IN WEST CARLETON

## Introduction

This fact sheet provides information on environmental lead, including sources, routes of exposure, health effects, and existing guidelines. The information is presented in the context of the recently discovered lead contamination of mine tailings deposited and used in West Carleton.

## What is Lead?

Lead is a naturally-occurring heavy metal. It has been mined and used in the manufacture of many products such as paint, plumbing, batteries and gasoline. Concentrations of lead in the environment can vary considerably. As a result, lead can be present almost everywhere: in soil, food, drinking water, in the air, and in consumer products. Because lead does not readily break down, it can remain as a contaminant for a long time once it is introduced into our surroundings. Lead sticks to soil particles and remains for a long time in both soil and water. Lead compounds are changed by exposure to air, sun, water and living organisms. Lead from soil does not readily leach into underground water or drinking water unless the water is acidic or "soft".

## Typical Sources of Lead in Outdoor and Indoor Environments Include:

- Soil dust contaminated by past activities such as lead mining and smelting, battery manufacture, lead-acid battery waste, leaded fuel emissions and firing ranges;
- The use of leaded paint indoors, especially if it is chipping or cracking (houses built after 1980 are unlikely to contain leaded paint);
- Soil near buildings may contain high lead levels due to paint chalking off the exterior;
- Transferring lead from worksites such as automotive shops to the home on clothing and shoes;
- Drinking water coming into contact with plumbing and fixtures made with lead or lead solder;
- Serving food or beverages in containers (some crystal and pottery) which contain lead;
- Home renovations and furniture refinishing;
- Use of lead solder (e.g., for electronics);
- Burning lead-painted wood or paper made with lead inks or dyes; and
- Leisure activities such as car or boat repair, stained glass making, recreational use of firing ranges.

## Lead Deposits in West Carleton and the Kingdon Mine

Deposits of lead sulphide (galena) in calcite are known to occur in several places in the Arnprior to Quyon area. In the Galetta area, there are records of five lead mines, the largest which was owned by the *Kingdon Mining, Smelting and Manufacturing Company Ltd.*, located on Morris Island at the conflux of the Mississippi River and Ottawa River near Arnprior.

The Kingdon mine operated briefly in the early 1880's and again from 1919 to 1931. At the height of operations, the site contained offices, residences for the workers and a number of industrial buildings, including a smelter and blast furnace to process the ores. Operations at the mine were terminated in May, 1931, due to poor metal prices. The company went bankrupt three years later. In 1965, the lands were acquired by the current owner, Kingdon Holdings Ltd.

**How Lead and Mine Tailings Became an Issue in West Carleton**

In the late summer of 1999, Mississippi Valley Conservation was reviewing a fill permit for a residence on Morris Island. The material was identified as tailings from the old Kingdon Mine. Subsequent testing found high levels of lead in the material.

Mississippi Valley Conservation informed the Region of Ottawa-Carleton Health Department, Ontario Ministry of the Environment (MOE) and the Township of West Carleton of these findings. The tailings from the old mine site have been used widely as aggregate material in the local area (road building, fill material, driveways) and further afield as ornamental stone, and in cement blocks and terrazzo floors.

The northeastern tip of Morris Island has been developed into full-time and seasonal waterfront lots as has the western shore of Morris Island. Many of these properties have received tailings materials from the old Kingdon Mine. The internal roads on the Island have all been constructed using this material as a base. Many other properties around the Galetta area also have used this material.

**Samples of the tailings can be viewed at locations listed on the last page of this fact sheet, or by visiting the Health Department's website: http://www.rmoc.on.ca/healthsante/**

**What is Known about the Current Situation**

Analyses of samples of the tailings from the mine site, driveways and roads around Morris Island have found elevated lead levels. The concentrations ranged from 2000 to 8000 parts per million - ten times or more above the province's criteria for residential, agricultural and park lands (see Guidelines for Lead, below). There is a potential risk for exposure to lead from dust from these tailings. Other possible risks include contamination of shallow wells and garden crops by leachate or dust.

A total of 16 well water samples were tested for lead as of January 7th. Homes closest to the closed mine site and a number of homes where use of the tailings was evident were sampled. On initial testing of the 16 wells, one had a lead level above the province's Drinking Water Objective, and one was close to the objective (see Guidelines for Lead, below). Re-testing of both wells found lead levels well below the Drinking Water Objective. Although limited in scope, the preliminary testing does not suggest a widespread well water problem exists.

A large amount of the tailings material remains on the closed mine site. In some locations, the material has been deposited in the Mississippi Snye, a watercourse running through the site. The manner in which the tailings have been stored over the years may have impacted the surface waters, aquatic life and plants. The ability of lead to move through the groundwater is largely dependent on the pH, as it is more soluble under acidic conditions. (A pH value of 7 is neutral - neither acidic nor basic. Values below 7 are acidic.) Given that the pH of the local groundwater in the area is generally above pH 6 and therefore not very acidic, extensive groundwater contamination from the mine site is not expected.

**Routes of Exposure to Lead**

The main way people are exposed to lead is by ingestion. Lead adheres to soil and dust particles, and can thus contaminate most surfaces, including food, toys, furniture, etc. Young children can swallow large amounts of dust and soil due to their tendency to "mouth" objects. Some children may also engage in pica - eating materials such as soil, paint chips, ashes and clay. Inhaled dust containing lead may enter the digestive tract. For adults, food is usually the main source of lead. There are no known industrial sources of airborne lead emissions in West Carleton. If lead is present in water, it is not readily absorbed through the skin; the main route of exposure is also ingestion.

**Health Effects of Lead Exposure**

Lead builds up in the body, and can affect almost all organs and systems. The central nervous system is the most sensitive, especially during childhood development. The degree of harm depends largely on the amount and duration of lead exposure. Acute poisoning from short-term exposure to high levels is very rare. Despite this, even small amounts of lead can harm young and unborn children, although the effects may be subtle. They can include decreased intellectual development, behavioural problems, impaired hearing and speech, and reduced birth weight and growth. The effects are more pronounced after exposures to high lead levels. Lead can pass from a mother's blood to a fetus during pregnancy.

For adults, the health effects of lead exposure may be less noticeable and usually occur at higher levels than in children. Chronic exposure can cause weakness in muscles and limbs, impaired mental and verbal ability, anemia, abdominal pain and constipation, fatigue and sleeplessness. Other possible effects include damage to the kidneys and the male reproductive system, disturbances in thyroid and immune system function, and high blood pressure. Lead is classified as possibly carcinogenic to humans by the International Agency for Research on Cancer.

**Testing for Lead**

The amount of lead in blood can be measured, giving an estimate of the extent of lead exposure. Blood lead tests are often used to screen children for high lead levels. Blood tests reflect relatively recent exposures to lead.

**Next Steps**

Immediate actions are being taken by the Region of Ottawa-Carleton Health Department to determine whether children or pregnant women on Morris Island or the surrounding communities of Galetta, Fitzroy Harbour and Kinburn have been exposed to above-normal lead levels. This will be accomplished by first testing blood in children under 7 years old and pregnant women, as young children are at highest risk from lead exposure and absorb more ingested lead than older age groups. Testing will then be available for other persons in the most affected area. The results will be used to determine whether testing of people living outside the most affected area is necessary.

If a child or pregnant woman is found to have elevated blood levels on initial health screening, more extensive blood testing is recommended. Follow-up consultation and visits by Health Department staff can be arranged to identify potential sources of lead, and to advise means to reduce exposure and/or medical treatment.

The Ministry of the Environment has initiated environmental testing at the closed mine site, to determine if the site itself poses any risks to public health and the environment. The results of the preliminary testing this winter and next spring will be used to determine what additional measures will be required at the closed mine site. The MOE is assisting the Health Department investigations of residential properties by providing analysis of drinking water and soil testing. Soil testing will also be done at other areas where tailings may have been used, like parks and schoolyards.

Mississippi Valley Conservation has established a policy whereby any applications to use the tailings material as fill in the area under its jurisdiction will be denied.

**Guidelines for Lead**

*Blood lead levels* - Children are considered to have elevated lead levels if the amount of lead in their blood is 10 micrograms per decilitre (10 µg/dL) or higher. This is equivalent to 0.48 micromoles of lead per litre of blood (0.48 µmol/L). If lead levels are higher, identification and elimination of environmental sources is usually indicated. Treatment is available for people who need it for high blood lead levels.

*Water* - The Ontario Drinking Water Objective for lead in drinking water is 10 parts per billion (10 µg/L). This is the same as Health Canada's Maximum Acceptable Concentration for lead in drinking water.

*Soil* - The Ministry of the Environment provides a guideline for use when property owners are cleaning up or redeveloping contaminated properties in Ontario. The 1996 guideline sets a lead in soils criteria of 200 parts per million for agricultural, residential and parkland where the groundwater is used for drinking. Below this level no further study or action is required. Levels above the criteria suggest that further evaluation of the risks posed by the material should be taken. The Ontario lead in soil criteria for industrial and commercial properties is 1000 parts per million. The Canadian Soil Quality Guidelines (1997) are set at the same level as Ontario's criteria.

**More Information**

The Region of Ottawa-Carleton Health Department can provide further information on lead - its health effects, testing, and risk reduction measures. A **Lead Hot Line** has been set up to answer questions about the lead situation in West Carleton, at **(613) 724-4222**. Information will be available on the Health Department's website at: **http://www.rmoc.on.ca/healthsante/.**

**Locations of Mine Tailing Samples Available for Public Viewing**

- Region of Ottawa-Carleton Health Department - 495 Richmond Road, Ottawa, 724-4222, Lead Information Hot Line;
- Ontario Ministry of the Environment District Office - 2435 Holly Lane, Ottawa, 521-3450;
- Township of West Carleton Municipal Offices - 5670 Carp Road, Kinburn, 832-5644;
- City of Kanata - 580 Terry Fox Drive, Kanata, 592-4281;
- Township of Goulbourn Municipal Offices - 2135 Huntley Road, Stittsville, 831-2832;
- Region of Ottawa-Carleton - Ottawa-Carleton Centre - Information Desk - 111 Lisgar Street, Ottawa, 560-1335;
- Fitzroy Centennial Public School - 3765 Loggers Way, Kinburn;
- Fitzroy Harbour Public School - 6830 Harbour Street, Fitzroy Harbour;
- St. Michael's Fitzroy Harbour - 159 Charles Street, Fitzroy Harbour;
- Galetta Community Centre - 119 Darwin Street, Galetta;
- Kinburn Community Centre - 3045 Kinburn Side Road, Kinburn;
- Fitzroy Harbour Community Centre - 100 Victoria Street, Fitzroy Harbour;

- Leeds, Grenville and Lanark Health Unit Office - Almonte Hospital - 75 Spring Street, Almonte - 256-1203;
- Renfrew County & District Health Unit Office - (Medical Centre beside Arnprior Hospital) - 346 John Street, Arnprior, 623-2991;
- West Carleton Medical Centre - 119 Langstaff Drive, Carp, 839-3271;
- Mississippi Valley Conservation - Highway 511, Lanark, 259-2421; and
- Sand and Gravel Suppliers for Ottawa-Carleton - See Yellow Pages of Ottawa-Carleton Telephone Book.

17 January 2000

Dear Doctor:

**RE: IMPORTANT NOTICE REGARDING POSSIBLE EXPOSURE TO LEAD IN TAILINGS FROM KINGDON MINE SITE, TOWNSHIP OF WEST CARLETON**

Kindly review this important notice which has gone out to residents and frequent visitors to Morris Island, Galetta, Fitzroy Harbour, Kinburn and area regarding possible exposure to lead. Please encourage your patients who are under age 7 or pregnant and who live or frequently visit the area indicated on the map to attend a blood lead screening clinic. Blood lead screening has generally replaced urine or hair screening as the method of choice. Clinics have been scheduled to allow testing without delay.

Different labs use different methods to determine blood lead. While they are all satisfactory for individual patient care, we cannot easily take the results from several laboratories and do a proper statistical comparison with blood lead survey data from elsewhere in Ontario. It is with this comparison that we expect to learn whether the mine tailings are a health risk to people in the area. We will use the Public Health Lab in Toronto for the lead screening tests as it has the experience and capacity to do large numbers of tests quickly.

We will ask for permission to send a copy of results directly to personal physicians--by mail for all and by phone for any high result of 0.48 umol/L (10 ug/dL) or more. Screening results will be used to identify patients who will require a more comprehensive investigation with repeat blood testing for lead and free erythrocyte protoporphyrin (FEP). Persons with a high result will be referred to their personal physician or to CHEO, which has agreed to do any further medical assessment and necessary treatment for children and adults, with referral back to the personal physician.

Please call the Lead Hot Line, **(613) 724-4222** at the Region of Ottawa-Carleton Health Department if:

- you know or become aware of anyone who has been in this area (or in known contact with Kingdon Mine tailings outside the area) and has a blood lead value of 0.48 umol/L (10 ug/dL) or higher;

- you would like a faxed copy of the 7 page lead chapter from Health Canada/Ontario Ministry of Health's *The Health and Environment Handbook for Health Professionals***,** 1998 for reference,

(this is one of the best succinct references on the subject in general; it may also be viewed on the internet at **www.hc-sc.gc.ca/ehp/ehd/catalogue/bch_pubs/98ehd211/98ehd211.htm**); or

- you have any other questions or concerns.

Thank you very much for your assistance in this project to determine if there is a risk to health from Kingdon Mine tailings.

Yours sincerely,

Edward Ellis, MD, MPH, FRCPC
Associate Medical Officer of Health
Region of Ottawa-Carleton Health Department

cc: Medical Officers of Health, surrounding public health units *Disponible en français: (613) 724-4222*