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

Our File/N/Réf.
Your File/V/Réf. RC

DATE 18 May 2000

TO/DEST. Coordinator,
Community Services Committee

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

SUBJECT/OBJET **RESULTS OF WEST CARLETON BLOOD LEAD SCREENING, JANUARY, 2000**

DEPARTMENTAL RECOMMENDATION

That Community Services Committee and Council receive this report for information.

BACKGROUND

Enclosed, please find information related to the results of blood lead screening last January in West Carleton near the Kingdon Mine site, (Annexes A--English summary, B--French summary and C--full report). This information is being distributed to residents in the area, primary schools serving the area, child care facilities in the area, various government offices and other interested persons.

It appears that mine tailings are a source of lead for children under age 4 years. Other potential sources, depending upon the family, are home renovation with exposure to old leaded paint and family member occupation or hobby involving lead. Mine tailings are not causing such children to have blood lead levels high enough to require medical treatment. This is not a case of mine tailings causing lead poisoning. Nevertheless, a child under age 4 in regular contact with mine tailings is likely to have a higher blood lead than one not in contact with the mine tailings.

Based on the above results, there is no need for repeat blood lead testing of all children under age 7 and pregnant women living or frequently spending time in the target area. However, if a child under age 4 is repeatedly exposed to dust from mine tailings during the summer and parents/guardians would like to know the child's blood lead, they may consult their personal physician.

PUBLIC CONSULTATION

The Health Department worked with relevant organizations in the initial investigation of the issue and planning of the lead screening clinics. A Kingdon Mine Site Community Liaison Committee now meets with volunteer residents of West Carleton, mining rights owners in the vicinity of or at Kingdon Mine, representatives of the Region of Ottawa-Carleton Health Department, Ministry of the Environment, Ministry of Northern Development and Mines, Mississippi Valley Conservation Authority and the Township of West Carleton. The Committee will address health and environmental issues pertaining to the use of tailings from the former Kingdon Mine.

FINANCIAL IMPLICATIONS

Expenses as of May 11, 2000 for the blood lead screening clinic and printing total $45,000, excluding salary during usual work hours. If the approved Health Department budget cannot accommodate this extra expense, a request for supplemental funding from the Region's contingency account will be made.

Approved by
Dr. Edward Ellis

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ANNEX A

SUMMARY

Results of West Carleton Blood Lead Screening

In 1999, testing of the tailings of the Kingdon Mine, near Galetta, Township of West Carleton, showed to have a high lead content in the range of 2,000-8,000 p.p.m.

Ingestion of dust from these tailings through hand to mouth activity could cause higher than average blood lead levels. Particularly at risk are:

- Children under age 7 because they absorb lead from their stomach and intestine more readily than others and their tissues are in a stage of rapid development;
- Pregnant women because of the developing fetus.

No cases of persons from this area with elevated blood lead had been reported to the Region's Health Department prior to the testing at the Kingdon Mine. However, cases may have existed and were not suspected by physicians.

On January 17, 2000, the Health Department issued a public notice to target area residents and school pupils strongly recommending a finger prick blood lead screening test for children under age 7 and pregnant women living or frequently spending time in the target area. It also offered testing to other persons living or frequently spending time in the target area if they think they may been exposed to dust from the tailings.

Blood lead screening clinics were held between January 19 and February 1, 2000 at the Township of West Carleton Municipal Offices. Results were sent to those screened as they were received from the Ontario Public Health Laboratory in Toronto.

In addition, drinking water lead testing was offered to all area residents. The Ontario Ministry of Environment began additional environmental testing to determine the extent of lead dispersion in the area.

Blood Lead Screening Results

Of the 688 persons tested, 196 lived in the target area and were under age 7 or pregnant. This was 65% of the estimated target area population under age 7 or pregnant. The other 492 persons screened included 120 children under age 7 and 19 pregnant women living outside the target area, 249 non-pregnant persons over age 6 living in the target area and 104 non-pregnant persons over age 6 living outside the target area.

Overall, 15 persons screened (2.2% of 688) had an elevated blood lead value $\geq$0.48 *u*mol/L. This included 5 children under age 7 (1.7% of 293), 1 pregnant woman, (2.5% of 40) and 9

others (2.5% of 357). Except for 4 adults, all were assessed at CHEO. Follow-up blood lead results were lower than the screening levels.
No one showed any clinical evidence of physiological lead effects and no treatment with chelating agents was needed. No other physicians reported any other known cases of persons with elevated blood lead who may have been in contact with the mine tailings. As the maximum screening blood lead level found was 1.03 *u*mol/L, there was no evidence of lead poisoning among those tested.

An extensive questionnaire was completed by the families of persons with an elevated screening blood lead. Other possible sources of lead exposure which were identified include home renovation with exposure to old leaded paint, hobby involving lead and occupation associated with lead exposure. There was a history of such exposure for 4 of the 5 children under age 7 and the one pregnant woman with an elevated screening blood lead.

Overall, the 0.092 umol/L geometric mean blood lead of children under age 7 in the target area is less than the predicted mean of 0.096-0.114 umol/L based on an analysis of blood lead surveys in southern and northern Ontario, (L. F. Smith and E. Rea, Canadian Journal of Public Health 1995; 86: 373-376). However, it appears that mine tailings are a source of lead for children under age 4 years. Other potential sources, depending upon the family, are home renovation with exposure to old leaded paint and family member occupation or hobby involving lead.

There is no need for repeat blood lead testing of all children under age 7 and pregnant women living or frequently spending time in the target area. However, if a child under age 4 is repeatedly exposed to dust from mine tailings during the summer and parents/guardians would like to know the child's blood lead, they may consult their personal physician.

Drinking Water Testing

All drinking water wells tested have shown acceptably low lead level except for one still under investigation.

As a general precaution, those who have lead pipes should flush them if not used in the past few hours until the water runs as cold as it will get.

Soil Testing in the Community

Detailed soil sampling was conducted this spring at each of the homes where someone had an elevated blood screening level. Testing included such areas as the driveway, play areas, lawns and gardens.

Results for the soil testing and moss bags, which measure lead that becomes airborne with dust, are pending.

Environmental Testing at the former mine site

Environmental testing is underway at the former mine site to determine if the site poses a risk to the natural environment.

The Ontario Ministry of the Environment will continue with its program of environmental sampling to determine the extent of environmental effects from the mine tailings.

ANNEX B

SOMMAIRE

Résultats du dépistage de plombémie dans West Carleton

En 1999, l'analyse de rejets de la mine Kingdon, près de Galetta, canton de West Carleton, révélait une teneur en plomb élevée, de l'ordre de 2 000 à 8 000 p.p.m.

L'ingestion de poussière de ces rejets, transférée de la main à la bouche, pourrait entraîner une plombémie (teneur de plomb dans le sang) supérieure à la moyenne. Ce risque touche particulièrement les groupes suivants:

- les enfants de moins de sept ans, parce qu'ils absorbent le plomb plus rapidement par l'estomac et l'intestin, et que leurs tissus sont en croissance rapide;
- les femmes enceintes, pour le développement du foetus.

Aucun cas de plombémie élevée dans ce secteur n'a été rapporté au service de la Santé de la Région avant les analyses de la mine Kingdon. Il peut néanmoins y avoir eu des cas dont les médecins n'avaient pas soupçonné l'existence.

Le 17 janvier 2000, le service de la Santé diffusait un avis public visant les résidants et les écoliers du secteur, en recommandant fortement un test de dépistage par prélèvement d'une goutte de sang sur le doigt, pour les enfants de moins de sept ans et les femmes enceintes qui vivent dans le secteur ou le fréquentent souvent. On offrait également le test aux autres personnes qui vivent dans le secteur ou le fréquentent souvent si elles craignaient d'avoir été exposées à la poussière des rejets.

Des cliniques de dépistage de plombémie ont été organisées entre le 19 janvier et le 1er février 2000, dans les bureaux municipaux du canton de West Carleton. Les résultats étaient transmis aux participants à mesure qu'ils étaient communiqués par le Laboratoire de santé publique de l'Ontario, à Toronto.

De plus, on a offert à tous les résidants du secteur une analyse de la teneur en plomb de l'eau potable. Le ministère ontarien de l'Environnement a entrepris des analyses environnementales supplémentaires pour établir la portée de la dispersion du plomb dans le secteur.

Résultats du dépistage de plombémie

Parmi les 688 personnes testées, 196 vivaient dans le secteur visé et avaient moins de sept ans ou étaient enceintes. Ce groupe représente 65 p. 100 de la population visée du secteur estimée pour ces deux groupes. Les 492 autres personnes testées comprenaient 120 enfants de moins de sept ans et 19 femmes enceintes vivant à l'extérieur du secteur visé, 249 personnes non

enceintes de plus de six ans vivant dans le secteur visé, et 104 personnes non enceintes de plus de six ans vivant à l'extérieur du secteur visé.
Globalement, 15 participants (2,2 p. 100 de 688) affichaient une plombémie élevée $\geq$0,48 *u*mol/l. Ce groupe comprenait cinq enfants de moins de sept ans (1,7 p. 100 de 293), une femme enceinte (2,5 p. 100 de 40) et neuf autres personnes (2,5 p. 100 de 357). À l'exception de quatre adultes, tous ont été analysés à l'HEEO. Des analyses de suivi de plombémie ont produit des résultats inférieurs à ceux du dépistage.

Aucun participant n'affichait de signe clinique d'effets physiologiques du plomb et aucun traitement de chélation n'était nécessaire. Aucun autre médecin n'a rapporté d'autres cas de plombémie élevée chez des personnes qui auraient pu entrer en contact avec les rejets miniers. Comme le taux maximal de plombémie dépisté s'établissait à 1,03 *u*mol/l, il n'y avait pas de signe d'empoisonnement au plomb chez les personnes analysées.

Les familles des personnes ayant affiché une plombémie élevée au dépistage ont répondu à un questionnaire exhaustif. Les autres sources possibles d'exposition au plomb relevées comprenaient des rénovations domiciliaires avec exposition à de la vieille peinture au plomb, un passe-temps faisant appel au plomb et une profession comportant une exposition au plomb. L'examen des antécédents a révélé une exposition de ce type chez quatre des cinq enfants de moins de sept ans et chez la femme enceinte qui présentaient une plombémie élevée au dépistage.

Dans l'ensemble, la moyenne géométrique de plombémie de 0,092 umol/l chez les enfants de moins de sept ans dans le secteur visé est inférieure à la moyenne prévue de 0,096-0,114 umol/l dérivée d'une analyse d'enquêtes de plombémie dans le sud et le nord de l'Ontario (L. F. Smith and E. Rea, Canadian Journal of Public Health 1995; 86: 373-376). Il semble toutefois que les rejets miniers constituent une source de plomb pour les enfants de moins de quatre ans. D'autres sources possibles, selon le milieu familial, sont la rénovation domiciliaire avec exposition à de la vieille peinture au plomb, ou un membre de la famille avec un passe-temps faisant appel au plomb ou une profession comportant une exposition au plomb.

Il n'est pas nécessaire de reprendre les tests sanguins de plombémie pour l'ensemble des enfants de moins de sept ans et des femmes enceintes qui vivent dans le secteur visé ou le fréquentent souvent. Cependant, si un enfant de moins de quatre ans est exposé à plusieurs reprises à la poussière des rejets miniers pendant l'été et que ses parents ou tuteurs aimeraient connaître la plombémie de l'enfant, ils peuvent consulter leur médecin de famille.

Analyse de l'eau potable

Tous les puits d'eau potable analysés avaient des teneurs en plomb à un niveau faible acceptable.

Par mesure de précaution, les personnes dont le foyer a une tuyauterie de plomb devraient laisser couler l'eau jusqu'à ce qu'elle devienne très froide, si elles n'ont pas ouvert le robinet depuis quelques heures.

Analyse du sol dans la collectivité

Un échantillonnage détaillé du sol a été réalisé ce printemps à chacun des foyers des personnes pour qui le dépistage avait révélé une plombémie élevée. Les essais ont porté sur des aires comme l'entrée, les aires de jeu, le gazon et le potager.

Les résultats des analyses de sol et des filtres de mousse végétale, qui mesurent la quantité de plomb transporté dans l'air avec la poussière, sont attendus.

Analyse environnementale à l'emplacement de l'ancienne mine

Des analyses environnementales sont en cours à l'emplacement de l'ancienne mine, pour établir s'il existe un risque pour l'environnement naturel.

Le ministère ontarien de l'Environnement poursuivra son programme d'échantillonnage environnemental afin d'établir la portée des effets environnementaux des rejets miniers.

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ANNEX C

17 May 2000

Results of West Carleton Blood Lead Screening

BACKGROUND

The Kingdon Mine, near Galetta, Township of West Carleton, stopped mining for lead, zinc and other minerals in 1931. Since the mine closed, rock mill tailings left over from the mining process have been used for local driveways, roads, fill and landscaping. Testing in 1999 showed the tailings to have a high lead content in the range of 2,000-8,000 p.p.m. If dust from these tailings is ingested through hand to mouth activity, it could cause higher than average blood lead levels.

Children under age 7 are 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.

No cases of persons from this area with elevated blood lead had been reported to the Health Department. However, cases may have existed and were not suspected by physicians. Therefore, in order to learn if the tailings are a risk to health, the Health Department issued a public notice to target area residents and school pupils on January 17, 2000, strongly recommending a finger prick blood lead screening test for children under age 7 and pregnant women living or frequently spending time in the target area, (**Appendix 1**). It also offered testing to other persons living or frequently spending time in the target area if they think they may been exposed to dust from the tailings. Blood lead screening clinics were held January 19-22, 28-29 and 31-February 1 at the Township of West Carleton Municipal Offices.

Results were sent to those screened as they were received from the Ontario Public Health Laboratory in Toronto. If anyone's screening test result was elevated at 0.48 *u*mol/L (10 *u*g/dL) or higher, further medical assessment and treatment if necessary were available at CHEO (Children's Hospital of Eastern Ontario). A Public Health Inspector offered to make a home visit to look for all possible sources of

lead, test drinking water, arrange for testing of tailings used on the property or nearby and provide information on how to reduce future exposure to lead.

All primary care physicians and Emergency Rooms in Ottawa-Carleton, Arnprior and Almonte were advised of the situation and asked to report any known cases of persons with elevated blood lead who may have been in contact with the mine tailings. Mine tailing samples were available for public viewing at several locations as well as through photographs at web site http://www.rmoc.on.ca/healthsante/. This bilingual site also includes the public notice, map of the affected area, advisory to physicians, and a *Backgrounder on Lead in West Carleton*. A Health Department telephone Lead Hot Line received 692 calls from January 17 through February 1 to make appointments for screening, answer questions and distribute lead related literature such as the Department's *Fact Sheet: Reducing Exposure to Lead* which was sent to each person tested with their result.

In addition, drinking water lead testing was offered to all area residents. The Ontario Ministry of Environment began additional environmental testing to determine the extent of lead dispersion in the area.

RESULTS

Blood lead screening

Of the 688 persons tested, 196 lived in the target area and were under age 7 or pregnant. This was 65% of the estimated target area population under age 7 or pregnant. The other 492 persons screened included 120 children under age 7 and 19 pregnant women living outside the target area, 249 non-pregnant persons over age 6 living in the target area and 104 non-pregnant persons over age 6 living outside the target area.

The average blood lead, (expressed as geometric mean which is the standard method for blood lead), for children under age 7 was 0.092 micromols per litre (*u*mol/L) inside the target area and 0.086 *u*mol/L outside. For pregnant women, values were 0.053 *u*mol/L inside and 0.064 *u*mol/L outside. For non-pregnant persons over age 6, values were 0.113 *u*mol/L inside and 0.103 *u*mol/L outside.

Further statistical analyses of results for children under age 7 and pregnant women were conducted to determine the impact, if any, of having mine tailings on one's property. Please see **Appendix 2** for the data.

In general, there was no statistically significant difference in the average blood lead of children under age 7 or pregnant women according to whether they lived inside or outside the target area, with or without mine tailings on their property. The one exception is that 23 children under age 4 living inside the target area and with mine tailings on their property had a higher blood lead on average than 42 children under age 4 living outside the target area and with no mine tailings on their property, (0.114 *u*mol/L compared to 0.075 *u*mol/L). These are the two groups of under age 4 children who have been the most and least

exposed to mine tailings. While this difference was statistically significant, (ANOVA: F=2.298, p=0.048), the difference was not clinically significant. In other words, no child under 4 living inside the target area and with mine tailings on their property had an elevated blood lead value $\geq$0.48 *u*mol/L. None had to be referred for additional testing or treatment. **Appendix 3** shows the distribution of screening blood lead results for children under age 4.

Follow-up of elevated blood lead screening results

Appendix 4 shows the distribution of all 688 results. Overall, 15 persons screened (2.2% of 688) had an elevated blood lead value $\geq$0.48 *u*mol/L. This included 5 children under age 7 (1.7% of 293), 1 pregnant woman, (2.5% of 40) and 9 others (2.5% of 357). Except for 4 adults, all were assessed at CHEO. Follow-up blood lead results were lower than the screening levels. No one showed any clinical evidence of physiological lead effects and no treatment with chelating agents was needed. No other physicians reported any other known cases of persons with elevated blood lead who may have been in contact with the mine tailings. As the maximum screening blood lead level found was 1.03 *u*mol/L, there was no evidence of lead poisoning among those tested.

An extensive questionnaire was completed by the families of persons with an elevated screening blood lead. Other possible sources of lead exposure which were identified include home renovation with exposure to old leaded paint, hobby involving lead and occupation associated with lead exposure. There was a history of such exposure for 4 of the 5 children under age 7 and the one pregnant woman with an elevated screening blood lead.

Drinking water testing

Of the 16 well water samples tested in late 1999 from homes closest to the old mine site or where there are tailings on the property, one had a lead level above Ontario's Drinking Water Objective of 10 micrograms per litre (*u*g/L) and one was close to the Objective. Re-testing of both wells found lead levels well below the Objective.

The 15 persons with elevated screening blood leads come from 14 families. Well water testing for the families showed all to have a lead content well below the Objective, (one family declined water testing). An additional 155 residents of the target area and beyond requested well water testing. Only 2 of these wells had lead levels in excess of the Objective. Upon re-sampling, one well met the Objective and the other is still under investigation.

Soil testing in the community

Detailed soil sampling was conducted this spring at each of the homes where someone had an elevated blood lead level identified during screening. Testing included such areas as the driveway, play areas, lawns and gardens. Twelve (12) additional homes with evidence of tailings were sampled. Six (6) sensitive areas such as school yards and parks were also sampled. Several dust collection devices

called moss bags are also being used near the mine site and in and around the communities to assess the potential for transport of lead with airborne dust. Results for the soil testing and moss bags are pending.

Environmental testing at the former mine site

Environmental testing is underway at the former mine site to determine if the site poses a risk to the natural environment. A detailed surface water study has been initiated including testing of water quality, sediment and fish. Mine tailings have been analyzed for lead content on a number of occasions. Moss bags are positioned at the site to measure the quantity of lead which becomes airborne with dust. Results of this work will be used to decide if remedial measures are required. Such measures will be included in the mine rehabilitation plan submitted by the mine site owners for review and approval by the Ministry of Northern Development and Mines.

Fitzroy Provincial Park

The Ontario guideline for surface water is the Provincial Water Quality Objectives (PWQO's) which are set at a level to protect all forms of aquatic life and all aspects of the aquatic lifecycle during indefinite exposure to the water. PWQO's for human exposure have been determined for some aspects of recreational water (i.e., aesthetics, pH, clarity and *E. coli* bacteria). However, the potential for harmful effects in humans due to recreational exposure to lead in water is not well characterized.

Given this, it is prudent to use the drinking water objective as the main route of exposure to lead would be through accidental ingestion of water while swimming. The lead content of water at the large swimming beach (6.7 *u*g/L) and at the small one (1.5 *u*g/L) are both below the Ontario Drinking Water Objective and therefore safe.

However, recent examination of the "sand" at the large beach reveals that there are mine tailings present with a reported lead concentration of 1,900 p.p.m. Although the average person is exposed to this "sand" for a short period only, it is prudent to take steps to reduce the lead concentration at this beach if feasible to $\leq$200 p.p.m., (the Ontario residential/parkland guideline for lead in soil). In addition, the concentration of lead in beach water when sediments of the river bed are disturbed by swimmers is not yet known. Further testing under these circumstances is advisable.

There is no evidence of tailings at the small beach or on the roads, trails or campsites within the park. Recreational users are not at risk.

Morris Island Conservation Area

There is no evidence of mine tailings on the roads or trails within the area. Recreational users are not at risk.

Informal beach off Chats Road, Fitzroy Harbour

This beach appears to have 15-20 centimetres of mine tailings. A sample was taken to confirm lead content. If this is a public beach in essence, it would again be prudent for the beach "sand" to have ≤200 p.p.m. lead.

DISCUSSION

Blood lead screening

Overall, the 0.092 *u*mol/L geometric mean blood lead of children under age 7 in the target area is less than the predicted mean of 0.096-0.114 *u*mol/L based on an analysis of blood lead surveys in southern and northern Ontario, (L. F. Smith and E. Rea, *Canadian Journal of Public Health* 1995; 86: 373-376). 1.7% of children under age 7 had a screening blood lead value of 0.48 *u*mol/L or higher, compared to the predicted 4%.

However, **it appears that mine tailings are a source of lead for children under age 4 years. Other potential sources, depending upon the family, are home renovation with exposure to old leaded paint and family member occupation or hobby involving lead.** Mine tailings on residential properties are not causing such children to have blood lead levels high enough to require medical treatment. This is not a case of mine tailings causing lead poisoning. Nevertheless, a child under age 4 in regular contact with mine tailings is likely to have a higher blood lead than one not in contact with the mine tailings.

Blood lead levels are typically higher in the summer months. Some animal studies suggest that increased exposure to sunlight increases vitamin D production which in turn increases calcium and lead absorption. In addition, outdoor activity in the summer provides more opportunity for exposure to any available outdoor lead.

A recent analysis of data from a Jersey City, NJ urban lead control project found the geometric mean blood lead in children aged 6-32 months to increase from 0.37 *u*mol/L in the winter to 0.52 *u*mol in the summer due primarily to the seasonal distribution of dust lead in the home, (L Yiin, G. Rhoads and P Lioy, *Environmental Health Perspectives* 2000; 108: 177-182). This winter value was four times higher than seen in West Carleton. If mine tailings increase dust lead in the home during the summer the way street dust, soil lead and lead-based paint increase it in Jersey City, the predicted average for West Carleton children under age 4 with tailings on their property will increase from 0.11 *u*mol/L to 0.15 *u*mol/L.

Even with this possible increase in the average blood lead, the chance that any one child in West Carleton will have an elevated blood lead which requires medical treatment is extremely small. Households that follow advice such as provided in the Health Department's *Fact Sheet: Reducing Exposure to Lead* will significantly reduce their children's chance of elevated blood lead. The fact sheet was distributed to all persons screened and will be on the Health Department's web site.

Based on the above results, there is no need for repeat blood lead testing of all children under age 7 and pregnant women living or frequently spending time in the target area. However, if a child under age 4 is repeatedly exposed to dust from mine tailings during the summer and parents/guardians would like to know the child's blood lead, they may consult their personal physician. Because this request is based on known exposure to lead containing dust, the blood test is covered by OHIP. Any results of 0.48 *u*mol/L or higher should be reported to the Health Department by the physician in order to determine other possible sources of lead in the person's environment.

Drinking water

All drinking water wells tested have shown acceptably low lead levels, except for one still under investigation. Any well with mine tailings nearby should be tested at least once as a precaution. In addition, those who have lead pipes should flush them if not used in the past few hours until the water runs as cold as it will get.

Further environmental testing

The Ontario Ministry of the Environment will continue with its program of environmental sampling to determine the extent of environmental effects from the mine tailings.

Acknowledgements

- Region of Ottawa-Carleton Health Department staff from all divisions
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- Township of West Carleton's staff and elected officials
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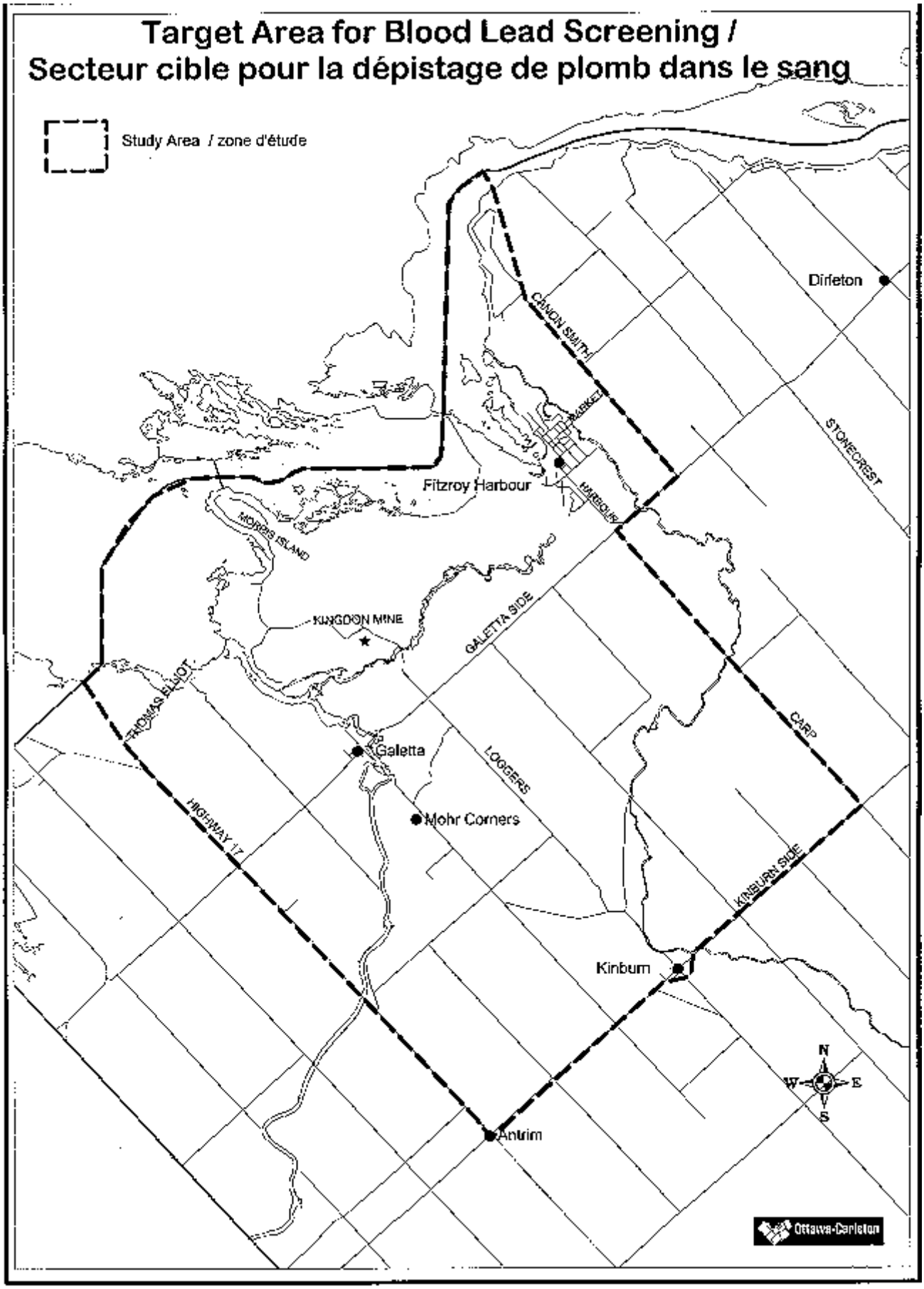

Target Area for Blood Lead Screening /
Secteur cible pour la dépistage de plomb dans le sang
Study Area / zone d'étude
Dirleton
CANON SMITH
MARKET
STONECREST
Fitzroy Harbour
HARBOURY
MORRIS ISLAND
KINGDON MINE
GALETTA SIDE
THOMAS ELLIOT
Galetta
LOGGERS
CARP
HIGHWAY 17
Mohr Corners
KINBURN SIDE
Kinburn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

West Carleton Blood Lead Screening, January 2000

Location	n	Min	Max	Range	Arithmetic Mean	Geometric Mean	Geometric Standard Deviation
Children Age 0-3	**147**	**0.04**	**0.58**	**0.54**	**0.116**	**0.091**	**1.26**
1. Inside Target Area, Tailings on Property	23	0.04	0.30	0.26	0.139	0.114	1.26
2. Outside Target Area, Tailings on Property	14	0.04	0.18	0.14	0.100	0.089	1.15
3. Inside Target Area, No Tailings on Property	63	0.04	0.53	0.49	0.121	0.097	1.25
4. Outside Target Area, No Tailings on Property	42	0.04	0.58	0.54	0.096	0.075	1.24
5. Inside Target Area, Don't Know	2	0.04	0.04	0.00	0.040	0.040	1.00
6. Outside Target Area, Don't Know	3	0.04	0.38	0.34	0.203	0.142	1.94

Location	n	Min	Max	Range	Arithmetic Mean	Geometric Mean	Geometric Standard Deviation
Children Age 4-6	**145**	**0.04**	**0.76**	**0.72**	**0.110**	**0.088**	**1.22**
1. Inside Target Area, Tailings on Property	26	0.04	0.51	0.47	0.118	0.098	1.20
2. Outside Target Area, Tailings on Property	15	0.04	0.76	0.72	0.141	0.093	1.44
3. Inside Target Area, No Tailings on Property	31	0.04	0.24	0.20	0.095	0.082	1.17
4. Outside Target Area, No Tailings on Property	24	0.04	0.32	0.28	0.095	0.078	1.22
5. Inside Target Area, Don't Know	27	0.04	0.27	0.23	0.092	0.079	1.17
6. Outside Target Area, Don't Know	22	0.04	0.61	0.57	0.139	0.110	1.26

Location	n	Min	Max	Range	Arithmetic Mean	Geometric Mean	Geometric Standard Deviation
Children Age 0-6	**292**	**0.04**	**0.76**	**0.72**	**0.113**	**0.090**	**1.24**
1. Inside Target Area, Tailings on Property	49	0.04	0.51	0.47	0.128	0.105	1.23
2. Outside Target Area, Tailings on Property	29	0.04	0.76	0.72	0.121	0.091	1.28
3. Inside Target Area, No Tailings on Property	94	0.04	0.53	0.49	0.113	0.092	1.22
4. Outside Target Area, No Tailings on Property	66	0.04	0.58	0.54	0.096	0.076	1.23
5. Inside Target Area, Don't Know	29	0.04	0.27	0.23	0.089	0.075	1.17
6. Outside Target Area, Don't Know	25	0.04	0.61	0.57	0.147	0.114	1.29

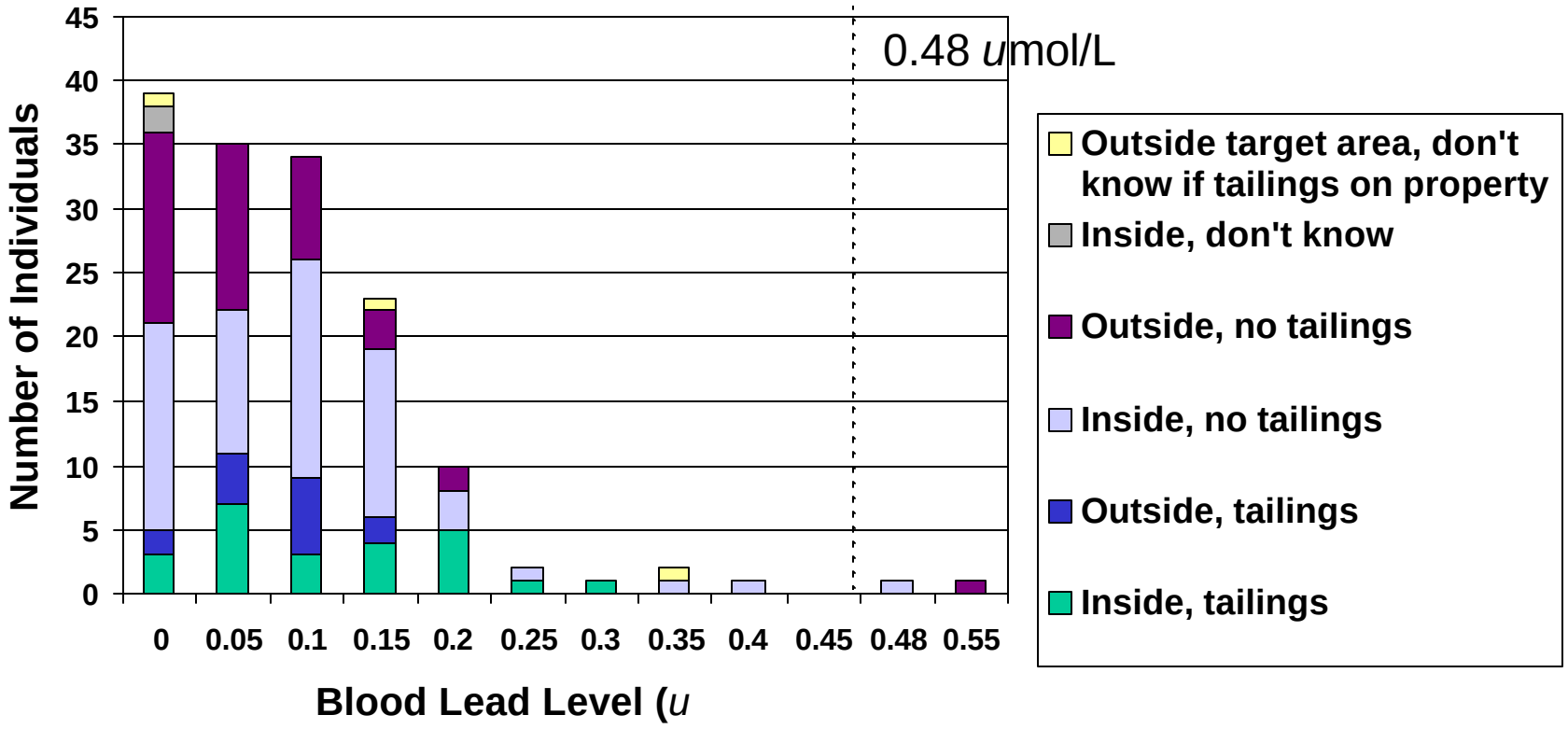
Location	n	Min	Max	Range	Arithmetic	Geometric	Geometric

					Mean	Mean	Standard Deviation
Pregnant Women	**43**	**0.04**	**1.00**	**0.96**	**0.082**	**0.058**	**1.21**
1. Inside Target Area, Tailings on Property	6	0.04	0.12	0.08	0.063	0.056	1.15
2. Outside Target Area, Tailings on Property	5	0.04	1.00	0.96	0.238	0.085	2.66
3. Inside Target Area, No Tailings on Property	12	0.04	.10	0.06	0.053	0.050	1.06
4. Outside Target Area, No Tailings on Property	5	0.04	.10	0.06	0.072	0.067	1.11
5. Inside Target Area, Don't Know	6	0.04	.21	0.17	0.072	0.056	1.25
6. Outside Target Area, Don't Know	9	0.04	.10	0.06	0.059	0.054	1.09

Note: Non-detectable blood lead was reported as <0.05 *u*mol/L. For analysis, this result was assumed to be 0.04 *u*mol/L.

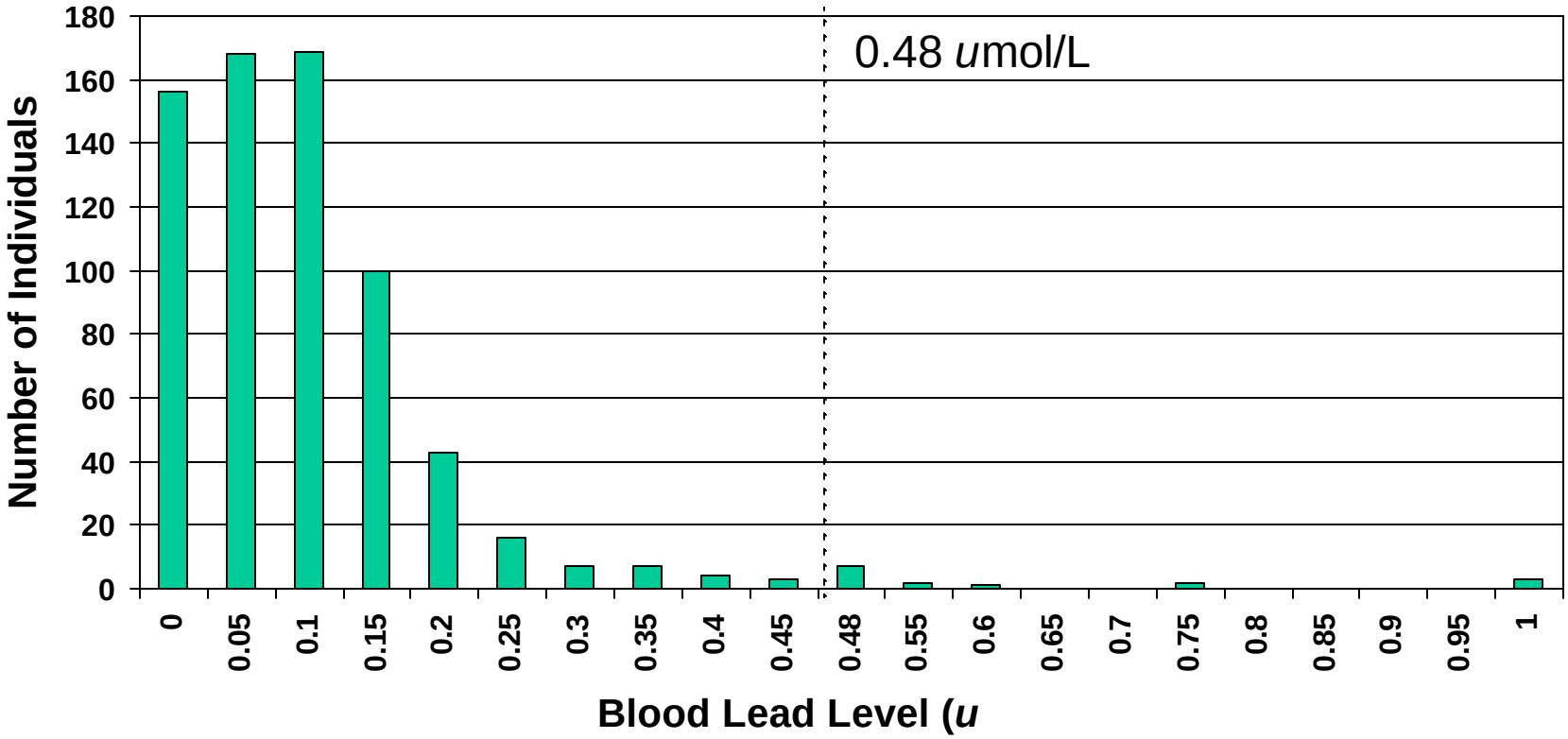
APPENDIX 3 OF ANNEX C

West Carleton Blood Lead Screening
January, 2000
Children Age 0-3, n=147



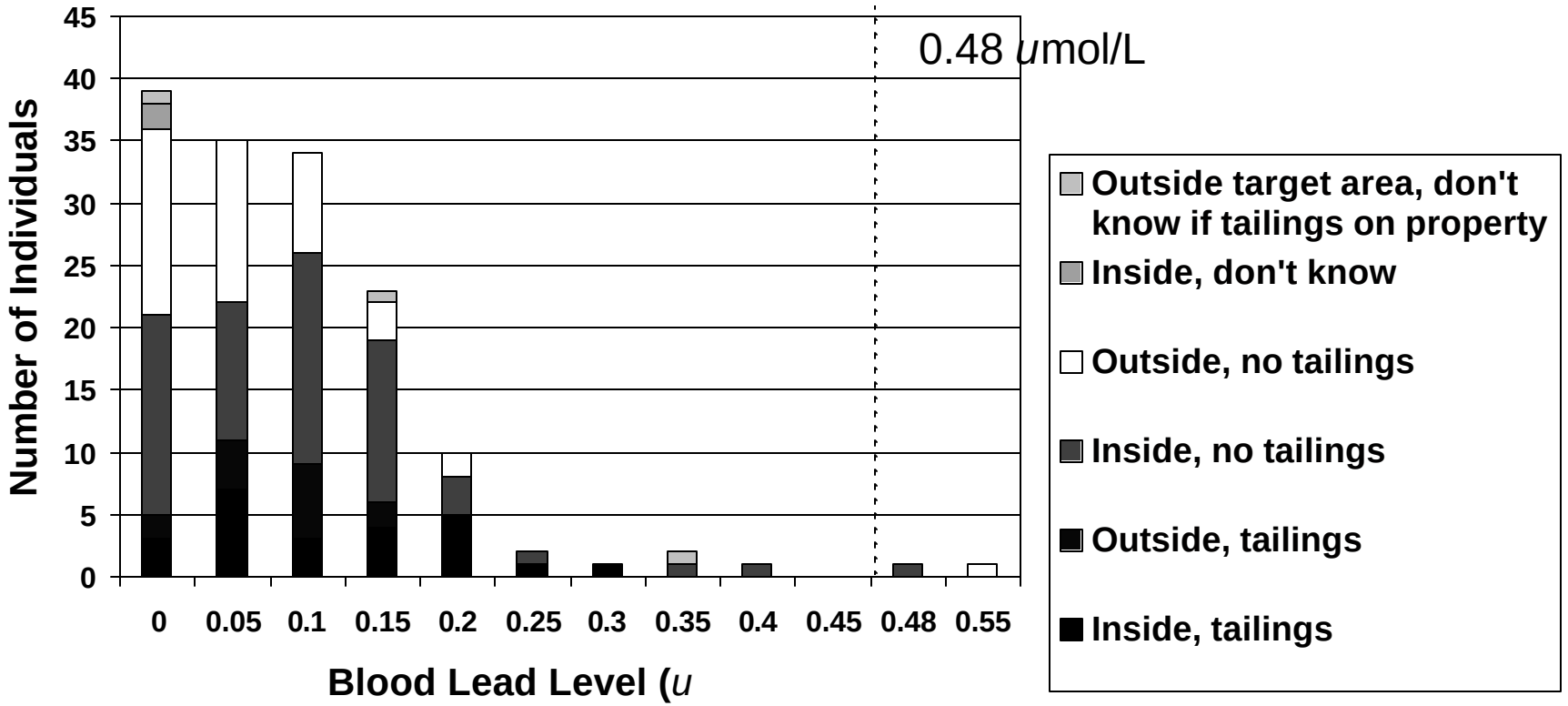
Note: Each bar of the histogram is labelled with the minimum value in its range.

West Carleton Blood Lead Screening
January, 2000
n=688



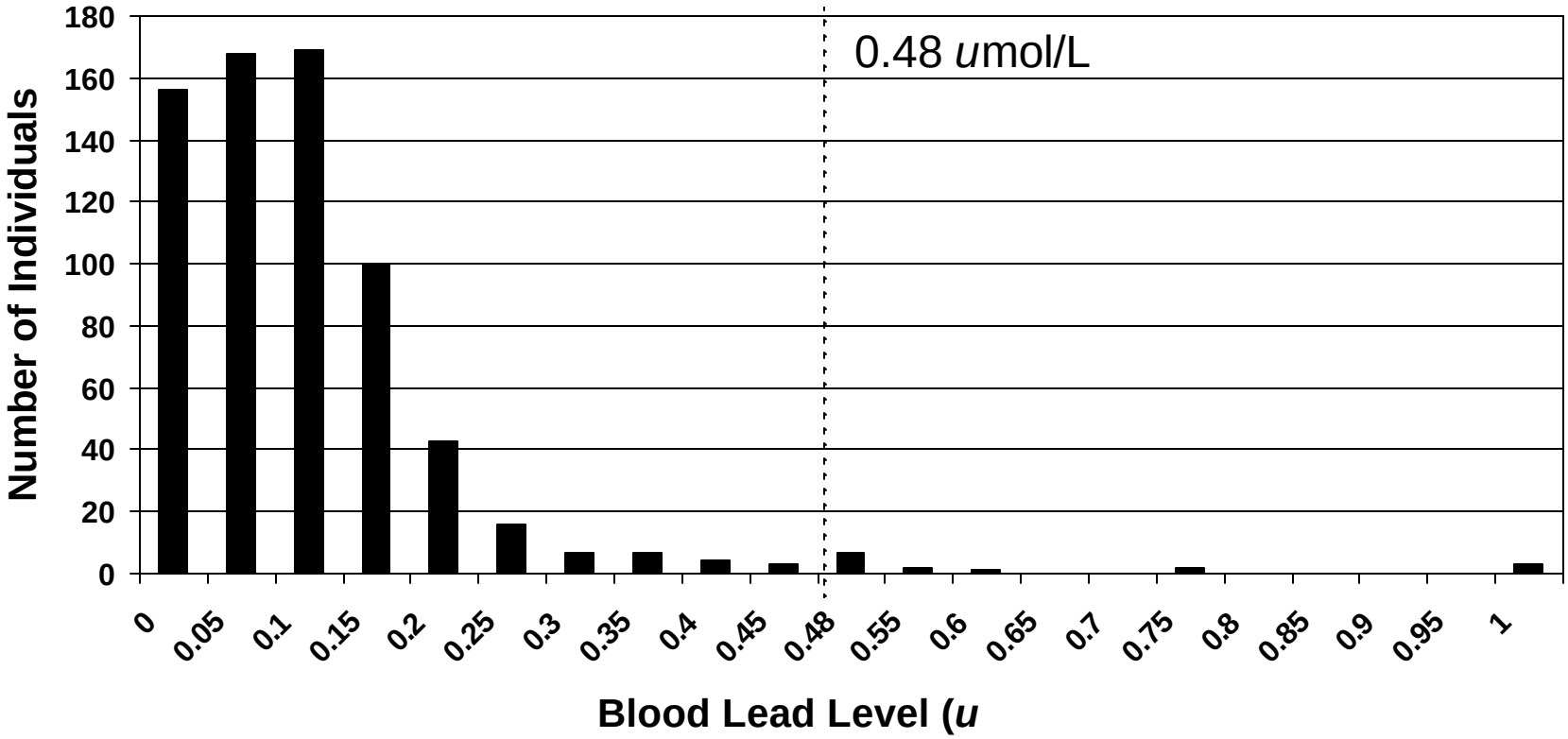
Note: Each bar of the histogram is labelled with the minimum value in its range.

West Carleton Blood Lead Screening
January, 2000
Children Age 0-3, n=147



Note: Each bar of the histogram is labelled with the minimum value in its range.

West Carleton Blood Lead Screening
January, 2000
n=688



Note: Each bar of the histogram is labelled with the minimum value in its range.