



Trail Area Health & Environment Committee

MINUTES

Meeting: Tuesday, February 17, 2015 7:00 p.m.
City of Trail Committee Room, Spokane St. Entrance

Committee Members:

Mike Martin, Chair; Mayor, City of Trail
Lisa Pasin, City of Trail, Councillor
Gord DeRosa, Community Member
Mark Tinholt, Teck Trail Operations
Diane Langman, Village of Warfield, Councillor

Marylynn Rakuson, Community Rep.
Jeannine Stefani, Interior Health
Steve Como, USWA Local 480
Sonia Tavares, Community Rep.
Dawn Tomlin, Interior Health

Invitees:

Tiffany Armstrong, Parent/Community member
Richard Deane, Teck Trail Operations
Kerri Wall, Interior Health
Andrea McCormick, SNC-Lavalin Inc.
Cindy Hall, SNC-Lavalin Inc.

Ruth Beck, Program Manager
Catherine Juelfs, SNC-Lavalin Inc.
Bruce Enns, SNC-Lavalin Inc.

MEETING MINUTES: Dated November 18, 2014

Motion (Marylynn): to approve the minutes from November 18, 2014; Lisa seconded. Minutes approved.

Motion (Mark): to approve Gord DeRosa as a community representative on the THEC; Sonia seconded. Approved.

Mike commended Gord DeRosa for his continuing service on the Committee as a community member and recognized his dedication to the program.

PRESENTATIONS, REPORTS, DISCUSSIONS & RECOMMENDATIONS

Explanation of the new proposed meeting format. Ruth explained the new format and reviewed the 5 main areas of the program, highlighting the three that are reviewed at each meeting: Air Quality, Family Health, and Home & Garden. Ruth also pointed out that the program document is a great reference for anyone new to the Committee. Mike added that there is now a 'community check-in' on the agenda to open the floor in particular to those who represent the community.

Program Updates & Business Arising:

Family Health - Interior Health Report,

Jeannine presented the report and highlighted the February blood lead clinic results. All case management blood lead levels have dropped (only one child's blood lead did not go below the trigger for case management, though it still dropped) and there were no new case management children. Jeannine clarified that you are likely to see a drop in blood lead in the winter and that, if you don't, it warrants further investigation. Jeannine gave a review of what qualifies a child for family case management: a blood lead level (BLL) greater than 7 µg/dL for children under 12 months, a BLL over 10µg/dL for children 12-36 months, or an increase of 3µg/dL or more between two fall clinics.

Jeannine continued on with a summary of 2014 from the Healthy Families (HF) Program.

Mike asked for clarification on the HF participation rate: it is 66 visits out of 95 families

contacted (69%). Jeannine noted the various ways she gets in contact with people: lists provided by the Ministry of Health, referrals from the Home & Garden (Healthy Homes) Program, and through the clinics and events she attends, etc. Steve wondered if people are targeted based on where they live. Jeannine added that we do have a target area (Trail and Rivervale); outlying areas are not specifically sought out but parents in those areas (Warfield, Oasis, Casino and Waneta) can request testing and Jeannine will provide it. Ruth added that children in the outlying areas are targeted for testing every 5 years.

Gord asked Mark about ambient air lead: is there any correlation between the blood lead levels in fall and the better air quality in August of 2014? Ruth clarified that even though the ambient lead was better this past year, August is still the month of the year where we would see the highest exposure as children are outside more and it tends to be dry and dusty. So we always test in September. Ruth and Richard noted the additional efforts that the Program Team and Teck have made to reduce lead exposure in the summer months. Mark noted that the BLL geomean was lower last year than in the years when Teck had a shutdown and that the results are representative.

Jeannine finished the report with a summary of community outreach.

Air Quality - Air Quality Update (Teck Trail Operations), includes Trimac Update

Mark presented the air quality update. Annual average of ambient lead in 2014 was the lowest since 2007. Richard added that there are still improvements to be made and the Fugitive Dust Reduction Program is continuing.

Mark provided an update on the groundwater plume; there will be some drilling done in the near future and a press release will come out at that time.

Regarding Trimac, Mark shared an update on the progress of putting a wheel wash station at the Waneta Reload Facility. Teck did a pre-feasibility study and will look at a feasibility study next so that the wheel wash station could be considered on the capital plan. Teck's current focus for capital spending is on the greatest opportunities of the Fugitive Dust Reduction Program; Bill Jankola will provide an update on this at the next THEC meeting. The Air Quality Technical Working Group update was presented by Mark in Ron Joseph's absence. Gord added information about a new washable furnace filter that costs about \$80.

Home & Garden - Community Program Office Report (SNC-Lavalin Inc.)

Cindy relayed some highlights for 2015 thus far: Healthy Homes visits are continuing and yard assessments will start in the spring. Andrea is working on the Lead Safe Home Renovation education program. Cindy and Bruce will go to the US CDC (Centres for Disease Control) Healthy Home Lead Poisoning Prevention Conference in Chicago in early March. Cindy added that the next outreach event will be Seedy Saturday on March 14th.

Program Planning & Operations - Executive Committee Report, Program Manager Report

Ruth presented the Executive Committee report. A Memorandum of Understanding (MoU) between Teck and IH is in progress; it will be shared with the Committee when it's finalized. The THEC submitted a Towards Sustainable Mining award application to the Canadian Mining Association at the end of January. The application was sent to all THEC members by e-mail. We intended to include a hardcopy in the agenda package but the pages are blank: we will re-send the e-mail. It would be great orientation for new members. Mike commented that Graham Kenyon put a lot of work on the application and was the catalyst to get it underway. Mark, Catherine Adair, Ruth and Sonia also contributed.

The THEP Program Document Abridgement: Ruth summarized its genesis, noting that Graham Kenyon has put a lot of work into it. **Motion** (Marylynn): to create an Abridgement

of the THEP document; Sonia seconded. Approved. Mike commented that it's a good way to re-engage the community and to honour Graham Kenyon.

Ruth continued with the Program Manager report and highlighted some of the items she's working on. Motivational Interviewing training for professionals conducting family home visits is being arranged for May/June. Also, Ruth will be bringing our communications plan into the 21st century of communications technology with particular focus on Lead Safe Home Renovation videos, and mobile technology to support the public consultation. Ruth also noted that Blood Lead Level Objectives Working Group will meet on March 12.

Community Check-in

Jeannine highlighted the letter (included in the meeting package) that provides information about the THEC to interested members of the public. Program staff will give this to people who express interest in knowing more about the THEC or the program.

Presentations:

Update on Human Health Risks from Metals. Mark gave a PowerPoint presentation on Arsenic, Cadmium, and Thallium. The summary of the presentation is as follows:

There are four metals that are of particular interest: Lead, Arsenic, Cadmium, and Thallium:

Lead: This is the focus of our program. Health risks from lead are well documented. At the children's blood lead levels that we currently see in Trail, any effects would be subtle and not measurable in individual children.

Arsenic: The health risks from Arsenic are such that there could be one additional case of cancer in the community every 75 yrs. This risk reduces as air quality improves and the level of arsenic in community air has been dropping.

Cadmium: Health risks related to Cadmium in Trail have been estimated to be within the levels considered safe. Bruce added that the BC Contaminated Sites Regulation (CSR) standard for Cadmium in gardens is very low (3ppm) and so it stays on our radar. Jeannine asked if mulching the grass clippings into the lawn can increase Cadmium; Mark clarified that yes, over several years you could load Cadmium in your garden if you mulch a lot of it into the compost and add it to your garden soil. We recommend that people leave lawn clippings on the lawn as that is generally considered more sustainable anyway. The program remediates a garden if Cadmium is above 30ppm (the Upper Cap Concentration).

Thallium: Health risks from Thallium exposure in Trail are within the levels considered safe. Gord asked what the symptoms of Thallium exposure are; symptoms include the loss of hair at low levels, at high levels it's damage to the peripheral nerves. In 2001 the levels in Trail were below the World Health Organization guidelines. Gord also asked how Thallium is produced/released in the smelter. Mark explained that it is associated with ore mineralogy and would be included in fugitive dust. The main pathway for Thallium exposure is through vegetable produce which may warrant further monitoring due to some uncertainty in the data about some specific vegetables such as kale.

Richard asked who performed the Human Health Risk Assessment studies. Mark answered that it's a company originally called Exponent, now called Integral; they're a company that specializes in Human Health Risk Assessments (HHRAs). He noted that the Trail HHRA was then reviewed by outside parties. Ruth added that the Report by the Medical Health Officer outlining risk levels was written in 2001 after the Lead Task Force Public Consultation and related to the first 3 phases of the HHRA in Trail. *(Note: the MHO concluded that the health risks from heavy metals in Trail are negligible and that "(u)sing assumptions that are intended to overestimate risk, the worst-case estimate of the*

incremental number of adverse health outcomes is so small that they could never be detected in the Trail population over a lifetime.”)

Marylynn would like to share this presentation with John Crozier and Mark added that he would be pleased to sit down with him and discuss it. Gord suggested that we send a card of appreciation to John Crozier for his contributions to the THEC and THEP.

ACTION: Mike Martin, Chair, to send a card from the Committee to John Crozier acknowledging his contribution to the program. Ruth/Liz to get a card to Mike.

It was asked if Teck has assessed the levels of metals in fish in the Columbia River. Mark answered that yes, it was assessed as a part of the HHRA but no increased risk was found, especially in regards to Mercury. Teck also performs regular monitoring of the river and there is a report coming out soon. Mark can present the highlights when it's released. Richard added that this would be a good question for Dave DeRosa (Teck's biologist who manages the river programs). Mike thanked Mark for providing a concise presentation and Mark acknowledged Ruth's contribution.

Home & Garden Program Annual Report. Cindy and Andrea presented the 2014 summary. Sonia asked if there is a correlation between properties with high lead in the soil and Case Management families. There is no correlation; however, Case Management families are placed in top priority for soil program services. It was then asked if there is a correlation between provision of Healthy Families Healthy Homes home visits and Case Management families. Data is still being gathered and there isn't enough information yet to make a correlation. Sonia commented that it would be great to have a case study. Gord asked about retesting remediated yards. Mark stated that retesting has been done and we can put together a presentation on remediated yards.

ACTION: Home & Garden team and Mark to make a presentation on yards that have been re-sampled after remediation.

Bruce raised the point of the persisting idea that the yard soil is the culprit for raised blood lead levels. Soil may be a factor, but it isn't the case every time; raised blood lead levels can be the result of dust in the home, lead paint, the soil, or any other number of things. It would be good to move away from the myths that persist, but it's never black and white and you can't necessarily name one direct source on an individual basis.

Mike requested that Andrea add a column that shows the backlog of sampled yards and gardens to the Yard Improvement & Renovation table. **ACTION:** Andrea to do this.

Setting the next meeting. Ruth brought up scheduling and would like to try to identify as many potential meeting dates for planning purposes. Every 2nd Monday is reserved for Trail City Council meetings. Warfield Council meets on the 1st and 3rd Wednesday of each month. Jeannine suggested the end of August as an alternative to the proposed September date. Dawn suggested that we keep to Tuesdays as much as possible.

NEXT MEETINGS (proposed dates, subject to ratification at meeting prior)

Tuesday, April 14, 2015 – confirmed.

Tuesday, June 23 or Tuesday, July 7 - TBD

Wednesday, September 16: conflicts with Warfield Council meeting – need a new date

Wednesday, November 18: also conflicts with Warfield Council – need a new date

Meeting adjourned at 8:53pm.

Trail Area Health and Environment Committee

Interior Health Family Health Report

February 17, 2015

1. February Blood Lead Clinic
2. Case Management from Fall 2014 clinic
3. Healthy Family Visits and 2014 stats
4. Community Education

Details:

1. February Blood Lead Clinic

- Done February 2nd and 3rd
- 37 invited
 - o 19 children were previous case management
 - o 17 new children who have since turned 6 months since the Fall 2014 clinic
 - o 1 parent request
 - o 31 samples obtained
 - All venous samples, all but 3 on first attempt
 - o 86% participation rate
- No new Case Management (CM) children
 - o All CM children's blood lead levels dropped.
 - o Only one CM child did not drop below the trigger for case management follow-up.
- Results mailed out to families on February 12, 2015.

2. Case Management (CM) from Fall 2014 clinic

- 19 CM children from the Fall 2014 clinic
 - o 9 were repeat CM from previous years
 - o 10 new CM
- PHN has had contact all 19 CM families and referred to Home and Garden Program
 - o 17 contact done by home visit
 - o 1 contact done at Health Unit
 - o 1 contact done by phone
- 27 previous years CM children closed

3. Healthy Family (HF) Visits and 2014 Stats

- 14 HF visits done since last THEC meeting on November 18th
- 8 more scheduled
- 2014 stats
 - o 141 on 2014 list
 - o 66 HF visits done in 2014 (53 done in 2013)
 - o 4 declined
 - o 29 attempted contact to offer a visit
 - o 67% participation rate of those contacted
 - o 42 still to contact (transferred to 2015 list)

4. Community Education

- Attend local Pregnancy Outreach Program (Building Beautiful Babies) monthly
- Presented at the KBRH Physician Rounds November 27th
- Attended Prenatal class on Feb. 5 with Home and Garden Program

TRAIL
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**HEALTH &
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COMMITTEE**



November 24, 2014

Cheryl Whittleton
Interior Health CIHS Administrator Kootenay Boundary
813 10th St., Castlegar
V1N 2H7

Dear Ms. Whittleton:

On behalf of the Trail Area Health & Environment Committee (THEC), I would like to commend Interior Health for doing an excellent job with the Fall 2014 Children's Lead Testing Clinic. All but one of the blood samples collected were venous samples. This is an incredible turn-around from 2013, when over 40% of the samples were capillary or "finger-poke" samples.

In a THEC media release last January, Dr. Andrew Larder, Senior Medical Health Officer with Interior Health made reference to the importance of venous samples. "We always prefer to take the sample from a vein..." stated Dr. Larder, noting that "... capillary samples have a greater risk of contamination". Dr. Larder added: "(w)e will be implementing changes to our clinic to minimize the number of capillary samples." This comment was in reference to the Testing Methodology Review conducted by Interior Health after the 2013 children's lead testing results first came to light.

Interior Health's Blood Lead Testing Methodology Review was clearly a major success and all the more so for achieving outstanding results in the first year of implementation. We, the Trail Area Health & Environment Committee, would like to congratulate all the Interior Health personnel who were involved in this achievement. Please let them know how appreciative we are of their efforts. They have made a difference to the families and children whose lead levels were tested this year. Also, the increased accuracy of this year's blood lead results reinforces our Health & Environment Program's commitment to excellence – a key element in safeguarding the public's trust.

Again, please accept our most hearty congratulations!

Yours sincerely,

A handwritten signature in black ink, appearing to read "Dieter Bogs". The signature is fluid and cursive, with a period at the end.

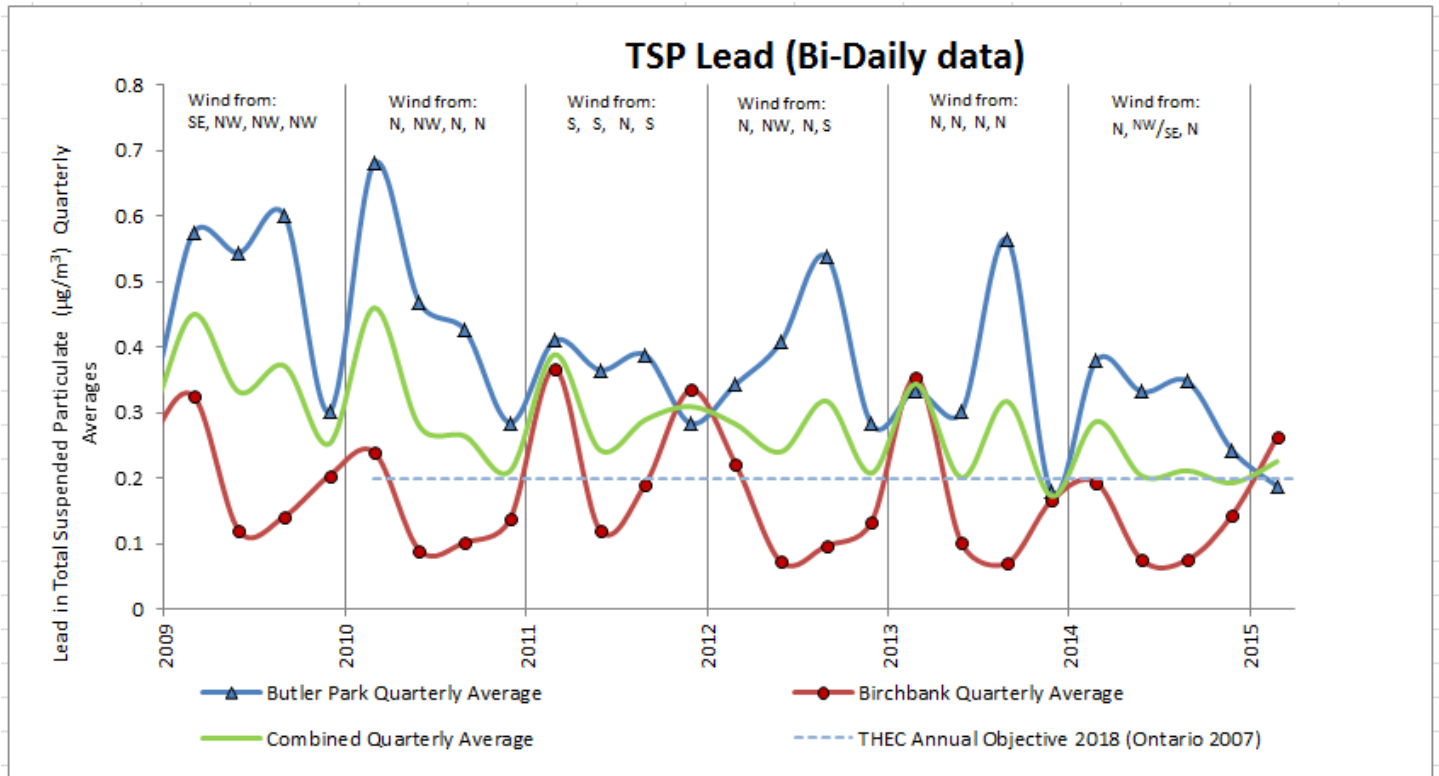
Dieter Bogs, Mayor
Chair, Trail Area Health & Environment Committee

Trail Health & Environment Committee – Teck Report Feb 17, 2015

Air Quality Program

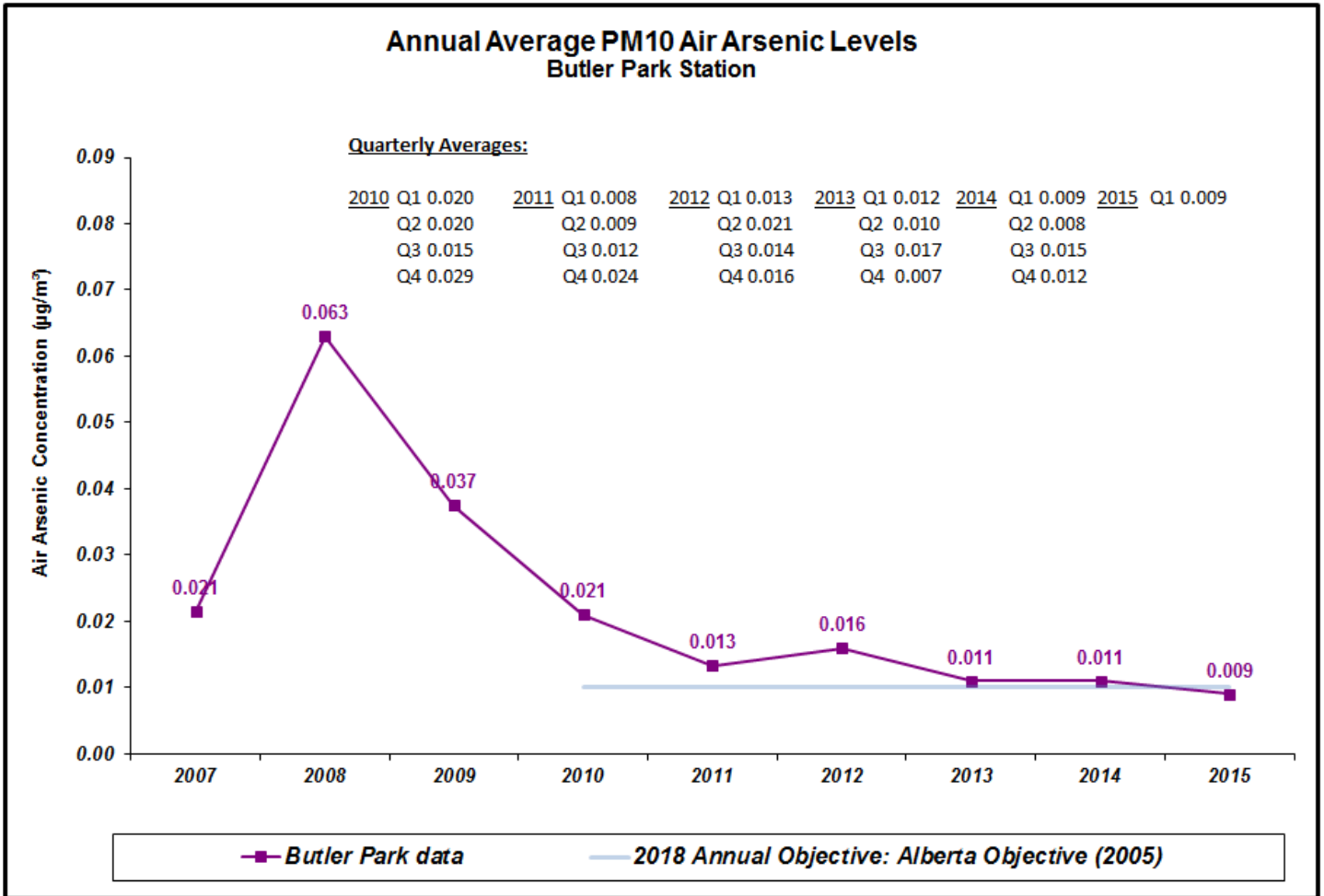
Lead – Total Suspended Particulate:

- The graph shows ambient (community) levels for the Butler Park and Birchbank monitoring stations based on quarterly averages of Bi-Daily data (rather than NAPS -6 day- data), measured stack emissions (annual basis), as well as predominant wind direction (quarterly, as measured at Maintenance Services Building). More detailed data (e.g. box-plots) are reviewed at the Air Quality Technical Working Group meetings.
- The annual average for 2014 was 0.326 $\mu\text{g}/\text{m}^3$ for Butler Park, the lowest since 2007.
- Quarterly averages for Lead in ambient air at Butler Park are expected to have some variability due to season, weather, predominant wind and operational variance. So far in 2015, the predominant wind has been from the south towards Birchbank.
- Real-time XACT monitors: the older XACT at Butler Park malfunctioned in September, so the new one at Duncan (located north of Metallurgical Operations) was moved to Butler Park while the older unit is being upgraded.
- Measured stack emissions have continued to be less than 0.5 tonnes/year. The discrepancy in trends between stack emissions and measured TSP in air is believed to be sourced from fugitive dust.
- Trail smelter's releases of lead to air are still amongst lowest in industry.



Arsenic- PM10:

- Arsenic in ambient (community) air had returned to pre-2004 levels in 2011. Improvements appear to be the results of actions taken at the Continuous Drossing Furnace and Refinery Scrubber Stack.
- The average for 2014 was 0.011 $\mu\text{g}/\text{m}^3$, just above the 2018 objective of 0.010 $\mu\text{g}/\text{m}^3$.
- Trail smelter's releases of arsenic to air are amongst lowest in industry.



Trail Area Health & Environment Committee Air Quality Technical Working Group

DRAFT MINUTES

Meeting: Feb 5, 2015



In Attendance:

Ron Joseph, Community Rep, Chair
Mark Tinholt, Teck, Secretary
Mike Martin, City of Trail
Gord DeRosa, City of Trail
Bill Jankola, Teck
Suzanne Belanger, Teck

Bruce Enns, THEP office
Andrea McCormick, THEP office
Cindy Hall, THEP office
Jack Balfour, HVAC specialist invitee

Regrets:

Brad McCandlish, BC MoE
Graham Kenyon, Community Rep
Richard Deane, Teck

MEETING MINUTES:

1. Review of prev. Sept 3 Minutes and Actions
 - Regarding the sulphide-like odour (H₂S?) was previously reported to be coming from a highway sewer manhole or vent located between E&M and the overpass. There appear two be two issues
 1. Occasional odour from E&M plant (acid mist, chlorine or bromine). Data was presented at previous meetings that show levels measured are below levels for community health concern. A consideration for planting projects.
 2. Occasional odour from CIV effluent Energy Dissipator. Septic odour ruled out as there is no sewage in that area. Teck has monitored this location for H₂S prior to entry in the past and have not detected H₂S above levels of concern.
 - ACTION: when the odour is noticed, call the Feedback line ASAP so that personnel can be mobilized to check it out
2. Summary of Public Feedback and Reportable Incidents over the Period
 - Table summary format was considered good, a suggestion to include wind direction in future summaries.
3. Household Furnace intakes/filters
 - This was the main agenda item; Jack Balfour was an invitee expert. The group reviewed mechanics of Forced Air Furnaces, HRVs and Air Conditioners and the potential concerns for household air/dust lead content/exposure.
 - Outcomes:
 1. Raising awareness on the importance of good filtration and changing filters will not hurt; there was some debate as to the scale of priority relative to other opportunities for supporting families.
 2. In any case, the THEP team will include furnaces on their "checklist" and raise the topic on a case by case basis as done for other opportunities.
 3. THEP Team to consider developing
 1. FAQ on furnaces, HRVs and Air Conditioners
 2. Item on this topic in Annual Newsletter
 3. The THEP team is considering a study design for re-examining dust levels inside homes under today's conditions, given that the Lead Task Force Studies were done in the 1990s pre-KIVCET; furnaces can be considered in this study design.

4.

4. Fugitive Dust Reduction Program Update

- Bill Jankola provided an verbal update on the progress of the Program, including the Smelter Recycle Building, KIVCET Burner ventilation project, Lead Refinery Ventilation study, and summer program improvements.

5. Inventory of Key Emissions Sources: Teck had prepared simplified figures and tables illustrating the key emission sources for discussion at AQTW meetings. This was not on the day's agenda due to time limitations, will come back to it at the next meeting

6. Next meeting: Date tba , location Community Futures board room

**Trail Area Health & Environment Committee
Program Manager Report
February 17, 2015**

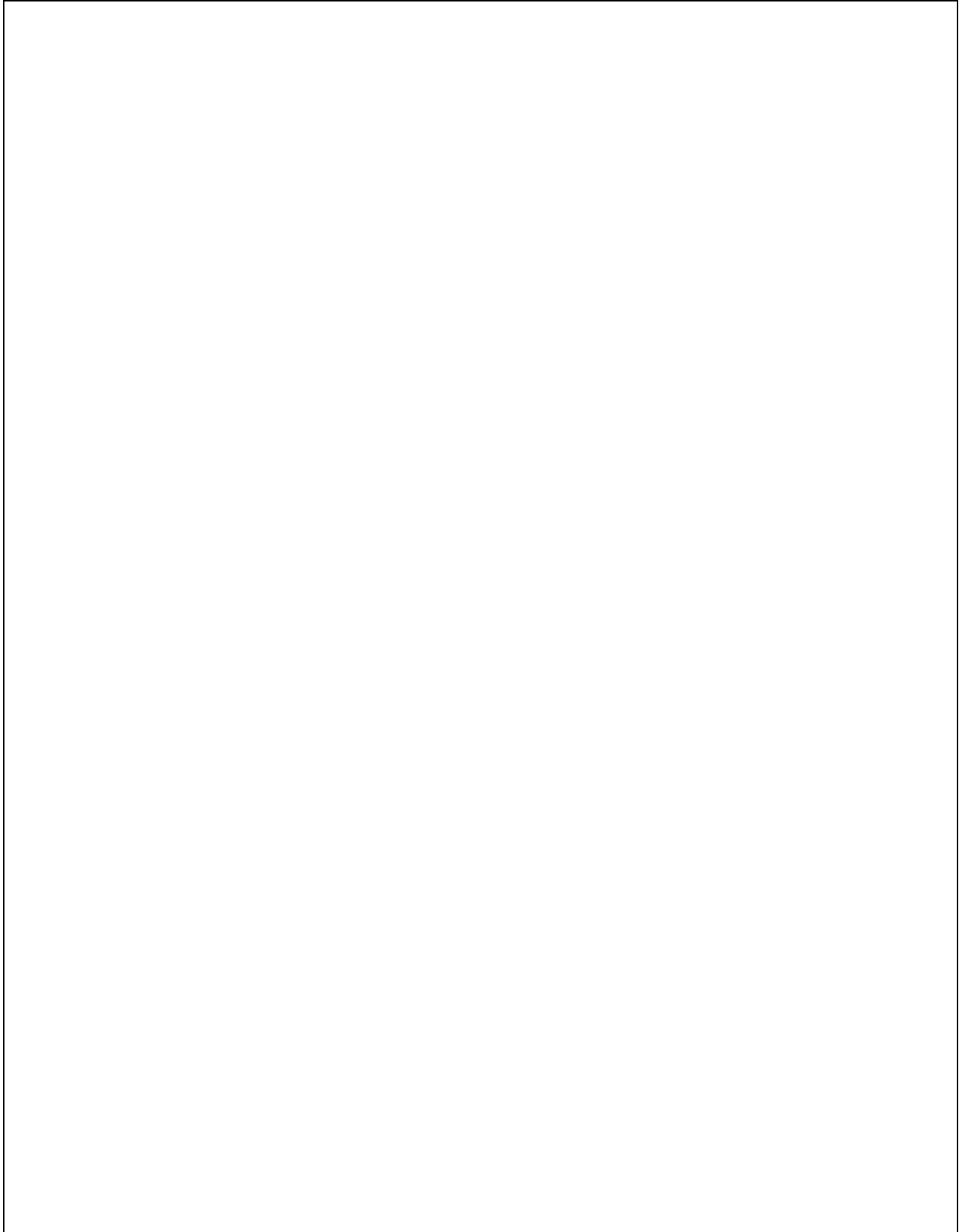
HIGHLIGHTS

1. Collaborated with Andrea to develop draft content for Lead-Safe Home Renovation education program.
2. Organized and participated in Healthy Families Healthy Homes Discussion Day, facilitated by Gary Ockenden. Tracking follow-up.
3. Briefed the new THEC Chair on current activities and issues, with Mark Tinholt.
4. Collaborated with Sonia Tavares to arrange Motivational Interviewing training – follow up from early childhood development lit review events last June 10/11.
5. Collaborated with Mark Tinholt to develop presentation on Health Risks from Metals.
6. Leading work to refine and document THEP's communications strategies: issues and opportunities related to social media, video based communications and website refinements.
7. Helping organize Blood Lead Objectives Working Group meeting for March 12.

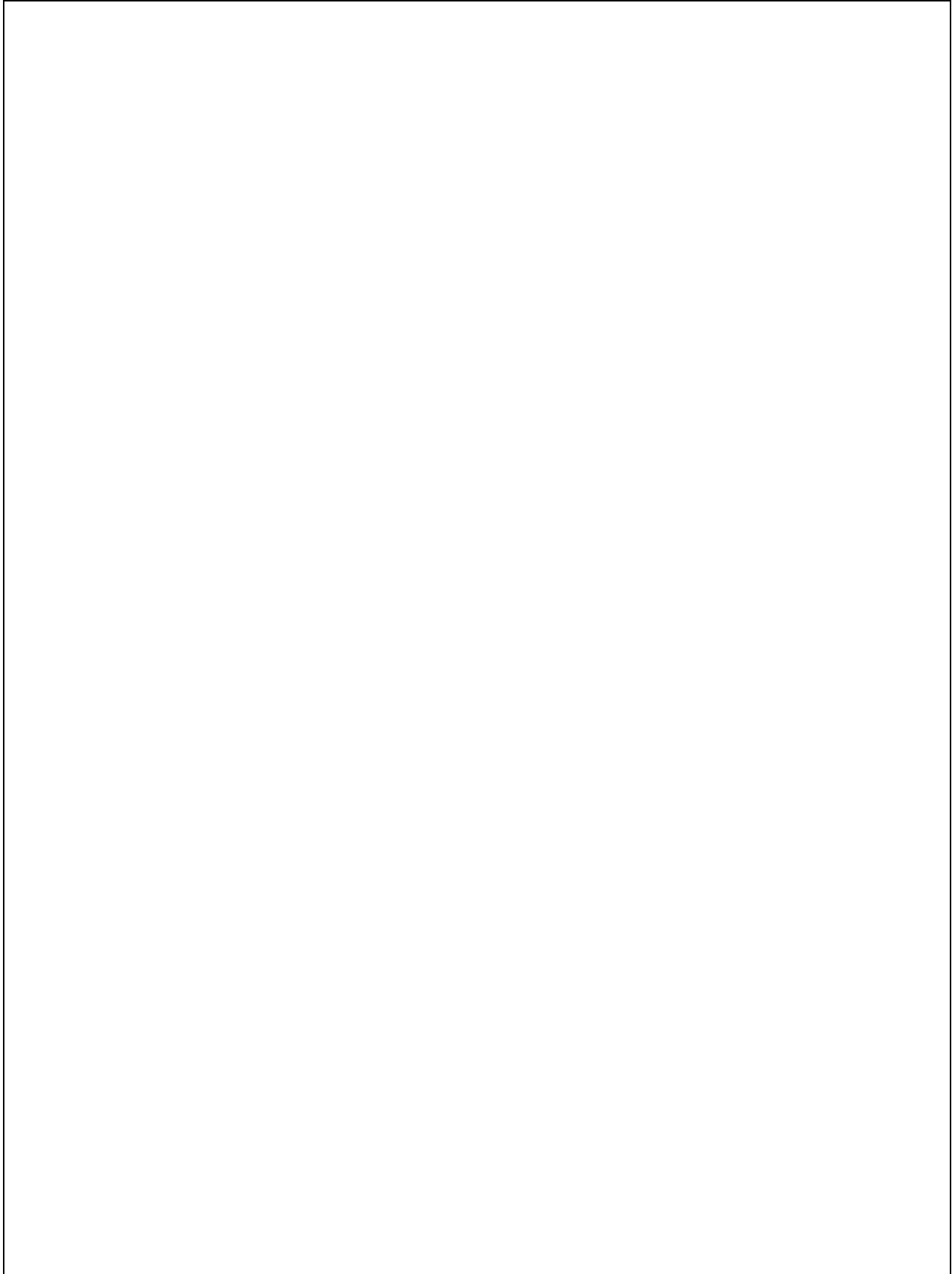
Towards Sustainable Mining (TSM) Community Engagement Award
Nomination Submission

Project or Program Name: _____
Company Name: _____
Facility Name: _____
Contact Person: _____
Address: _____
Telephone: _____
Email: _____

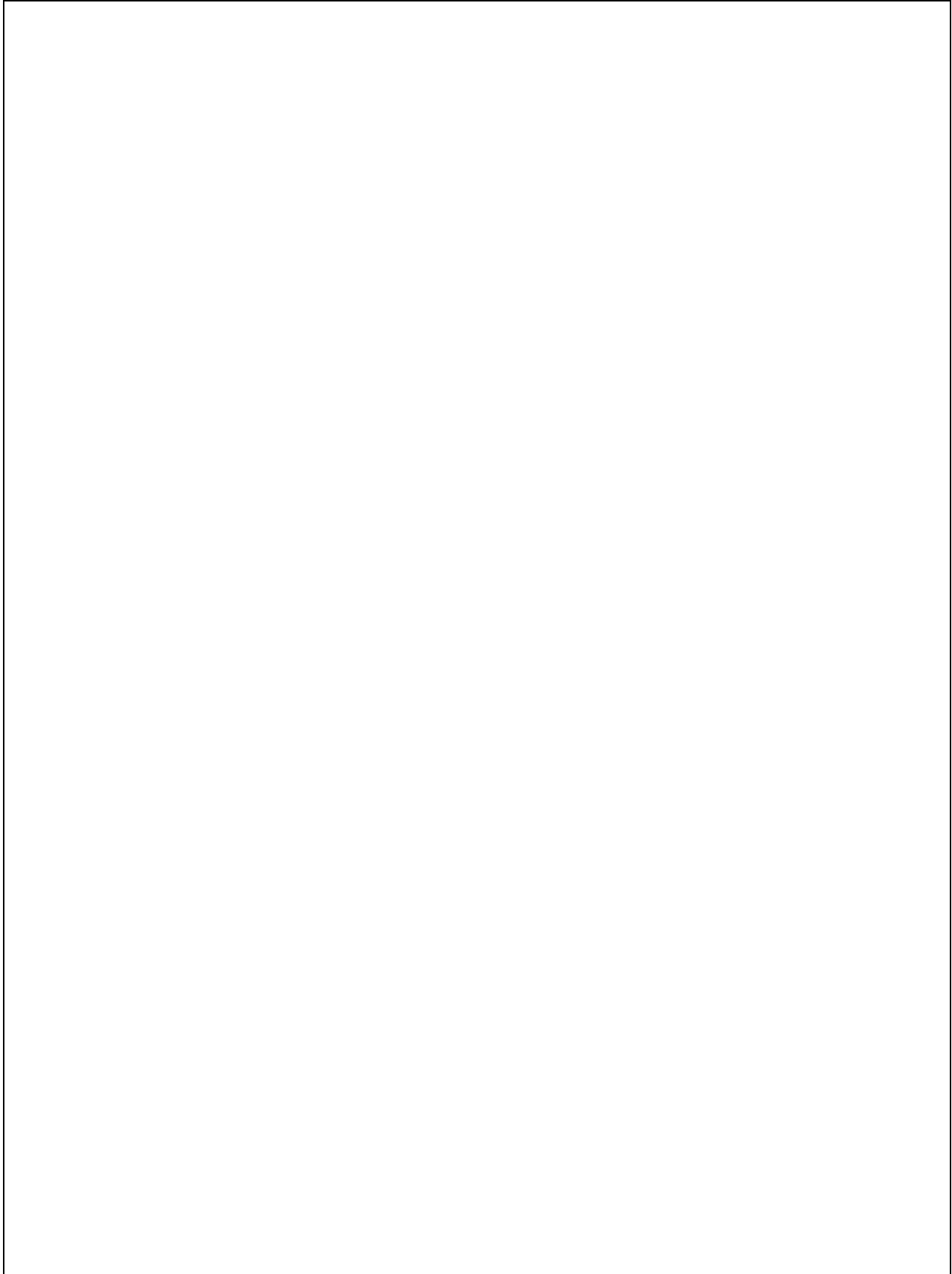
1. Provide a description of the project (objectives, audience(s), outcomes), and how the project meets one or more of the award criteria outlined in the Appendix. (The project description should be **500** words or less)



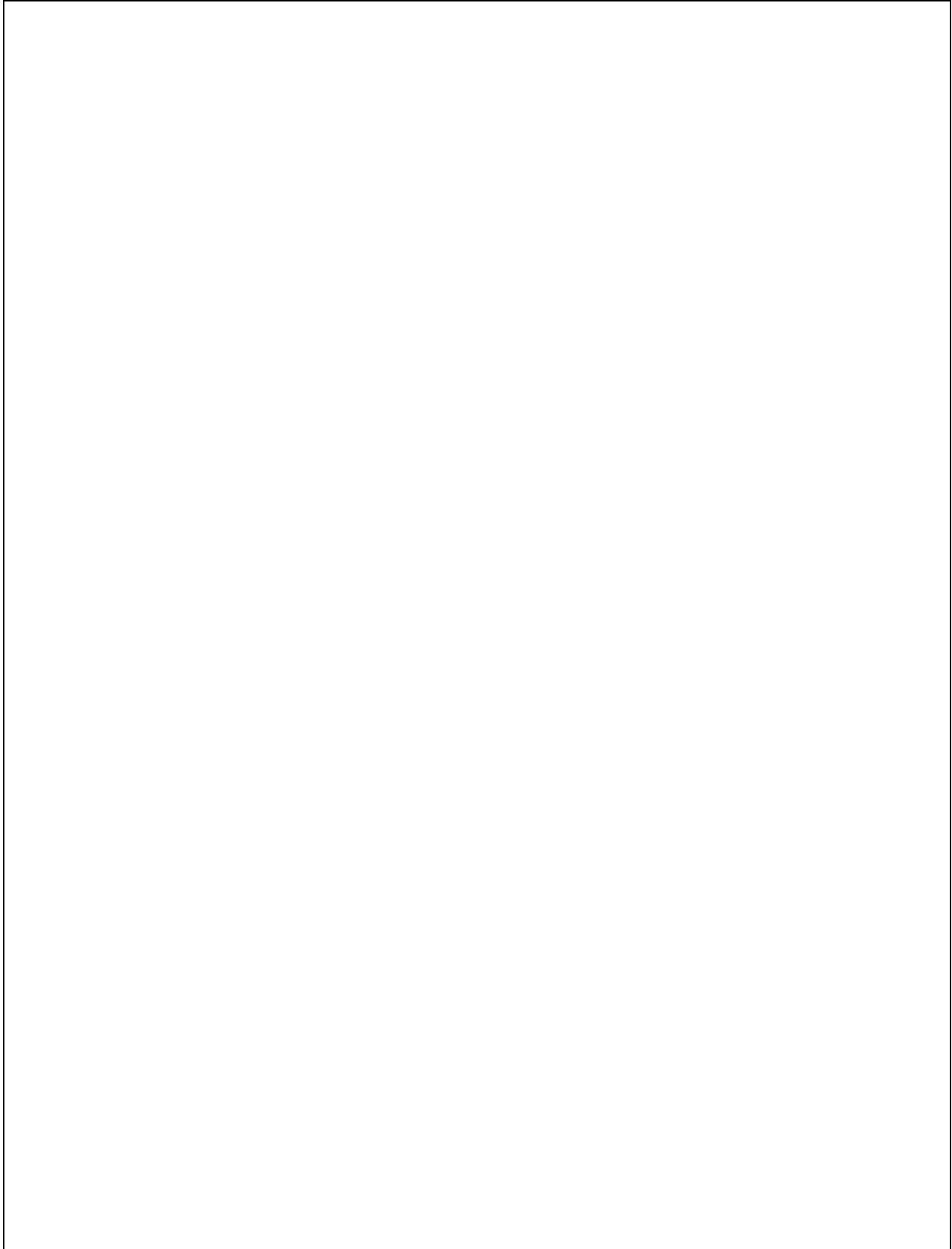
2. What makes this project innovative? (Response should be **500** words or less)



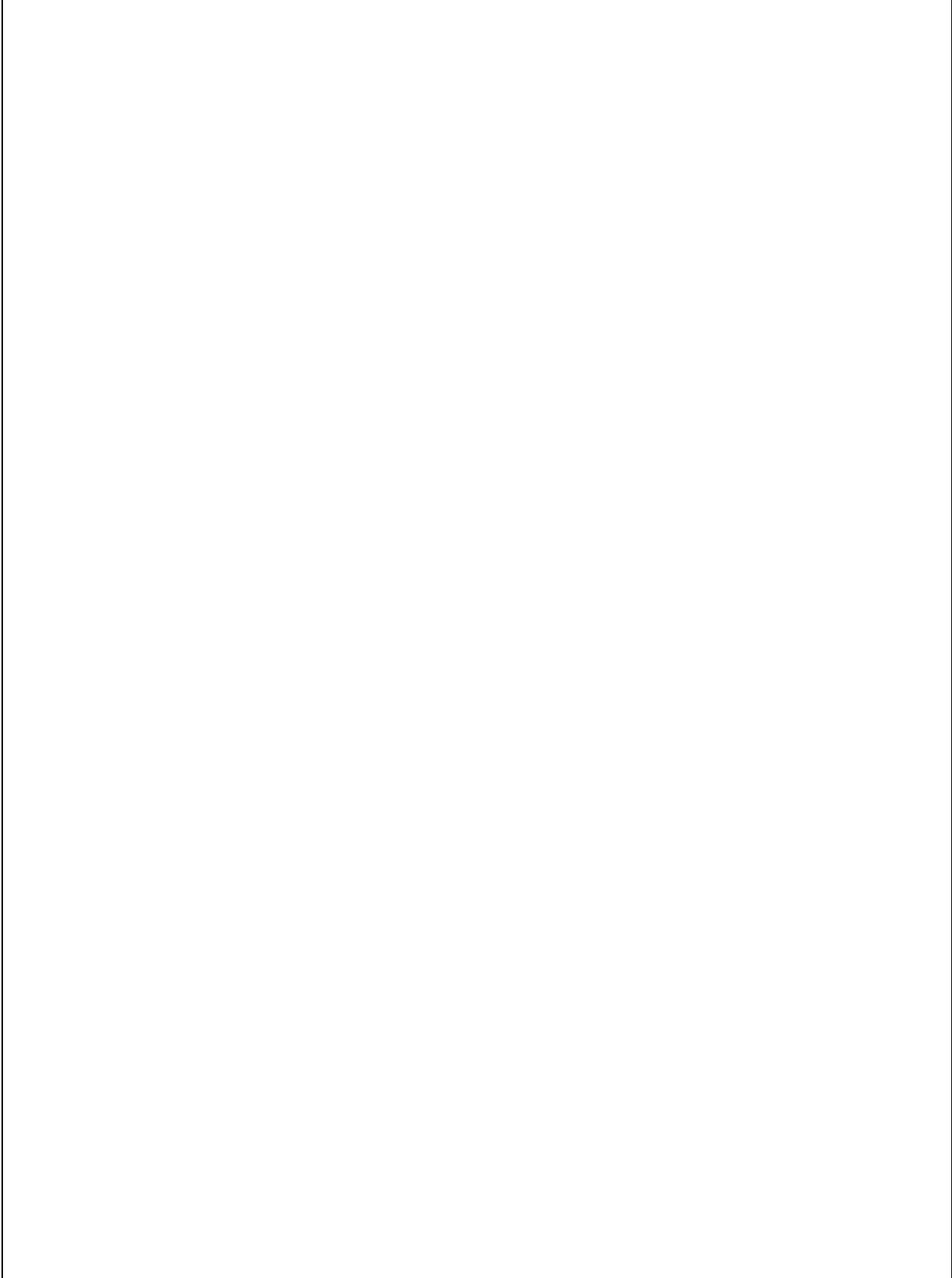
3. Please provide an explanation of its leadership value (i.e. can this approach be applied by others?)
(Response should be **500** words or less)



4. How effective has this project been in terms of contributing to the local community? How have the benefits been measured? (Response should be **500** words or less)



5. Were communities of interest involved in the design and/or implementation of this project? If so, how? (Response should be **500** words or less)



6. When did the project begin and, if relevant, when was it completed?

Start date: _____

Completion date: _____

7. Does the nominee publicly report performance against the TSM protocols?

Yes

No

8. Has the nominee completed at least one round of TSM external verification?

Yes

No

If yes, please provide the date of the last external verification and the name of the Verification Service Provider:

Date of external verification: _____

Name of Verification Service Provider: _____

Nominated by: _____

High-resolution photos should be used to support the nomination. At least one letter of support or endorsement from a relevant community of interest must be attached. Nominations may include other attachments such as news articles on the project, consultants' reports, and videos. However, the Awards Selection Committee will base its decision primarily on the information supplied in this form, the facility's TSM performance and the community support letter.

Appendix

TSM Community Engagement Award Criteria

The award shall be made to a mine or metallurgical site currently participating in and publicly reporting TSM performance for an innovative achievement in community engagement that took place within the last three years and whose contribution meets one or more of the following criteria:

- Innovative approaches to engage with communities of interest and ensure that communities of interest have a legitimate voice in the company's decision-making process.
- Collaboration with communities of interest to address common community goals.
- Initiatives to address a specific need identified by the local community.
- Creative and/or innovative initiatives in which a large impact is made with a strategic investment.
- Unique approaches to health and safety initiatives for employees, contractors and communities.
- Initiatives intended to provide lasting benefits to local communities through self-sustaining programs that enhance the economic, social, educational and health aspects of a community.
- Collaboration with governments and communities to support and encourage community development programs.

General Requirements

1. A mine or metallurgical site's most recent TSM performance results will be a heavily-weighted factor in the selection process. Recipients of this award will have completed at least one cycle of TSM external verification.
2. The award may be presented from time to time as circumstances warrant, but normally, not more than one award may be made in any given year. In the event of extraordinary nominations, consideration may be given for more than one award.
3. Only one nomination per facility per award is permitted in a given year.
4. All nominations must be accompanied by:
 - A complete description of the meritorious achievement.
 - A justification of its leadership value and its potential impact on environmental and/or social practices in the mining sector.
 - At least one letter of support or endorsement from a relevant community of interest.
 - TSM performance scores provided by MAC or an appropriate provincial mining association.
5. The CIM executive director shall refer each nomination to the TSM Awards Selection Committee.

6. The Committee's selection shall be reported to CIM Council no later than the last Council meeting held prior to the annual CIM Conference & Exhibition at which the presentation is expected to be made.
7. The members of the TSM Awards Selection Committee shall not be party to the nomination of any candidate.
8. The award shall be presented by a MAC representative at the annual CIM Conference & Exhibition. In the event that the sponsor is not available the award shall be presented by the current CIM president.
9. All nominations properly presented, and not selected as award recipients for that particular year, shall be carried forward for the next two years unless formally withdrawn. If a nomination is carried forward, the most recent year of TSM performance data will be taken into consideration. Nominees will be provided an opportunity to update their submission for reconsideration the following year.

Nomination Process

Deadline for nominations is 5:00pm (EST), January 30, 2015.

Nominations should be submitted by email, fax or mail to:

Email: nross@mining.ca (Electronic submissions are encouraged)

Fax: (613) 233-8897

Mail: Mining Association of Canada
1105-350 Sparks Street
Ottawa, ON K1R 7S8

For more details on the awards, please contact Nathalie Ross:

Phone: (613) 233-9392 ext., 317

Email: nross@mining.ca

Web: www.mining.ca

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Thank you for your interest in the Trail Area Health & Environment Committee (THEC). The THEC gladly welcomes interested families to actively participate and provide feedback.

For over 20 years, the THEC has been working hard to provide a healthy environment, a strong economy, and making Trail the best place to raise a family. The THEC, a partnership between the BC Ministry of Environment, Interior Health, Teck Metals Ltd., and the Community itself (represented by the City of Trail and individual community members), is responsible for the governance of the Trail Area Health & Environment Program (THEP). Part of what makes the THEC such a unique and successful partnership is the value it places on involving community members as key stakeholders alongside industry and government.

While the main focus is preventing exposure to smelter metals in the community, the THEC is actively involved in partnerships and projects that promote children's healthy development. The THEC is a founding member of the Family Action Network, a Greater Trail coalition dedicated to making the Trail area the best place to raise a family. In 2013, the THEC started the Healthy Families and Healthy Homes programs for expectant families and families with children under 3 years of age, helping them to maintain a safe and healthy home and yard environment for their children.

THEC meetings occur 5-6 times a year and are open to the public and media. Meeting invitations are sent out via email before each meeting. If you would like to be notified of upcoming THEC meetings or for more information, please contact the THEC Admin Assistant, Liz Anderson at 250-368-3256, ext. 53257 or liz.anderson@snclavalin.com. Also, please visit our website at www.thep.ca; there you can find past meeting minutes, our newsletter archive, fact sheets, a FAQ section, and much more!



Update on Human Health Risks from Metals

Presentation to Trail Area Health & Environment Committee,
February 2015



Presentation Outline

1. Metals of Interest
2. How are Health Risks Assessed?
3. Lead & Thallium (bio-monitoring)
4. Human Health Risk Assessment 101
5. Cadmium & Arsenic (HHRA)
6. Conclusions

This presentation is a summary of reports that have been reviewed by Ministry of Environment Land Remediation Section, and/or Interior Health Medical Health Officer



Metals of Interest

1. Lead
2. Arsenic
3. Cadmium
4. Thallium

Other metals were assessed in early studies and found they could be ruled out for unacceptable risk.

Teck continues to monitor for larger list of metals in air emissions and dustfall.



How are Health Risks Assessed?

For each of the 4 metals of interest, we'll explain how risks are determined and what we know today.

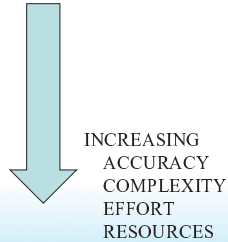
This includes a 2014 update to the Human Health Risks Assessment regarding risks from garden produce.



Risk Assessment Methods

Three ways to assess risks:

1. Numerical Standards
2. Risk-based Standards
3. Bio-monitoring



Risk Assessment Method: Bio-monitoring

LEAD – measured in blood

THALLIUM – measured in urine



LEAD

- Risk levels are assessed by measuring lead in blood, because health risks have been tied closely to blood lead levels
- Lead was the focus of the Lead Task Force and remains the focus of the THEP



LEAD

- Adult blood lead levels (non-occupational) are in the range currently considered safe.
- Young children's blood lead levels are still above the national average. THEC has set objectives towards continuous improvement.
- Main pathway of concern is hand-to-mouth ingestion of dust by young children.
- Lead is the main focus of all of THEP's programs, in particular the Fugitive Emissions Reduction Program



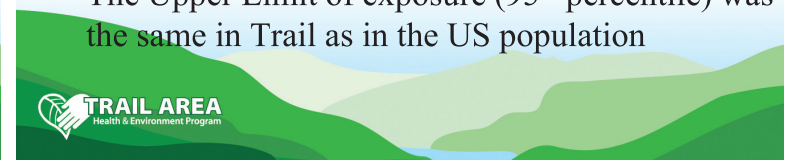
THALLIUM

- Thallium is measured in urine, because:
 - there is no accepted regulatory reference number to compare with estimated intake, and
 - the best way to measure thallium exposure is in urine.



THALLIUM

- 2001 Urine Study sampled 50 Trail residents
 - Levels were well below the World Health Organization guideline
 - On average, Trail residents had slightly higher levels than typical for the US population
 - The Upper Limit of exposure (95th percentile) was the same in Trail as in the US population



THALLIUM

- The most important pathway is eating produce, then ingestion (“eating”) of soil and dust
- Recent monitoring of metals in produce has shown variability in thallium levels in some leafy vegetables (e.g. kale) which may warrant further investigation



THALLIUM

- Thallium emissions have not increased since 2001
- Fugitive Dust Reduction Program will also reduce thallium emissions
- Considering new study design to monitor thallium in produce



Risk Assessment Method #2: Human Health Risk Assessment (Risk based Standards)



HHRA 101

- A. What is a Human Health Risk Assessment (HHRA)?
- B. HHRA Methods – Regulatory Reference Numbers
- C. Trail HHRAs
- D. Trail HHRA Methods - Upper Limits of Risk

Part A: What is a HHRA?

- A human health risk assessment is an **estimate** of the type and likelihood of negative human health effects from exposure to chemicals in the environment (e.g. air, food, soil etc) now or in future (i.e. from continued exposure)

Part A: What is a HHRA?

- HHRA involves an **estimate** of risks
- There are different kinds of risk calculations for two different types of risks:
 - Non-cancer risk
 - Cancer risk

Part B: Assessment Methods For Non-Cancer Risks

Hazard Quotient (HQ):

- Measures the estimated intake compared with the regulatory reference level
- “Does the estimated “dose” exceed an acceptable level?”
- B.C. default* acceptable risk: 1
 - *unless MHO specifies alternate risk level
- At default level, risk is considered “negligible”



Part B: Assessment Methods for Cancer Risks

Incremental Lifetime Cancer Risk:

- What is the probability of a person developing cancer in a lifetime of exposure?
- Estimated as “excess numbers of cancers in a population of 100,000 over a lifetime of exposure”
- B.C. default* acceptable risk: 1 in 100,000
 - *unless MHO specifies alternate risk level
- 1 additional cancer per 100,000 population over a lifetime of exposure



Part C: TRAIL HHRAs

Phase/Year

- MoE 1995 (Phase 1)
- Phase 2 1998
- Phase 3 1999
- Phase 4 2008
- Garden Produce Update 2014



Part D: Trail’s Methods Assess *The Upper Limit of Risk*

- Risk were assessed on a population (i.e. community) basis
- To evaluate risks conservatively for the *most exposed* individual, the risk assessment reports the “**upper limit of risk**”, expressed as the 95th percentile.



CADMIUM

Cancer Risks

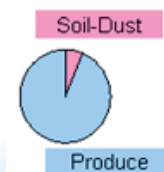
- Breathing air is the main pathway for cadmium cancer risks
- Incremental Lifetime Cancer Risk from breathing Trail air is well within default acceptable level of 1 in 100,000.



CADMIUM

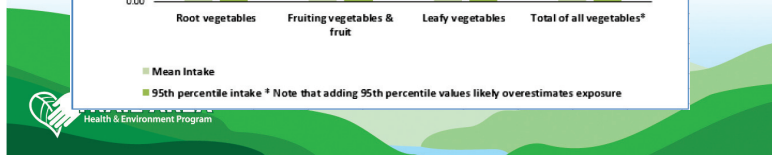
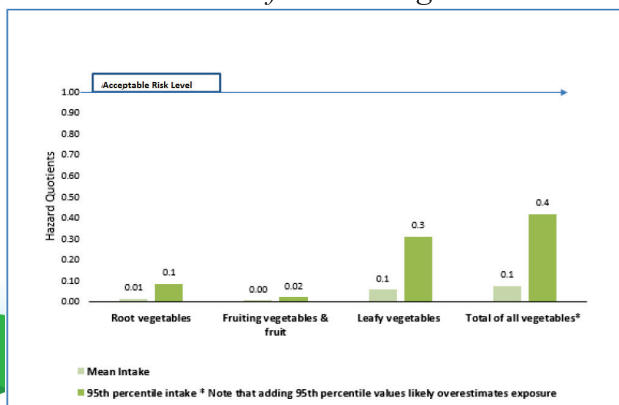
Non cancer Risks

- Eating garden produce is the main pathway for non-cancer risks from cadmium



CADMIUM

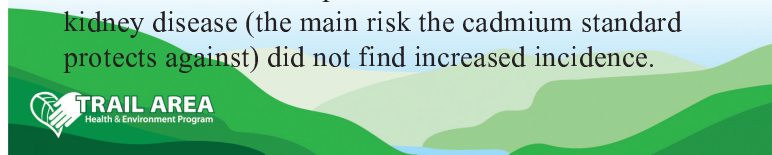
Non Cancer Risks from Eating Trail Produce



CADMIUM

Non-cancer Risks

- HHRA results: The estimated risk from ingesting cadmium in Trail produce is within acceptable levels (Hazard Quotient <1)
- People have been eating local produce for a long time in Trail, when deposition rates were higher than today.
- A 1994 review of hospitalization and death rates for kidney disease (the main risk the cadmium standard protects against) did not find increased incidence.



CADMIUM

- Even though risks are within acceptable levels, the THEP remediates garden soil when the cadmium level in soil is more than 30 parts per million (the MoE “Upper Cap” Concentration)
- This is conservative because 30 ppm is near the Upper Limit of the cadmium levels in soil in Trail.

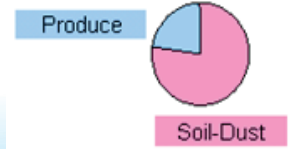


ARSENIC

Non –Cancer Risks

Main Pathways:

- ingesting soil/dust (most important)
- ingesting produce (second most...)
- breathing air (third)



ARSENIC

Non-cancer Risks

For ingestion of Soil/Dust and Produce combined:
Hazard Quotient is approximately 1 in the near neighborhoods with the highest results
(Upper Limit of Risk)



ARSENIC

Cancer Risks

Main Pathways

- breathing air (most important)
- ingesting soil/dust (second)
- ingesting produce (third)



ARSENIC

Cancer Risks

For Near Neighborhoods w. Highest Results
i.e. Upper Limit of Risks

Air: 7 in 100,000

Soil/Dust (Indoor/Outdoor): 3 in 100,000

Produce: 2 in 100,000

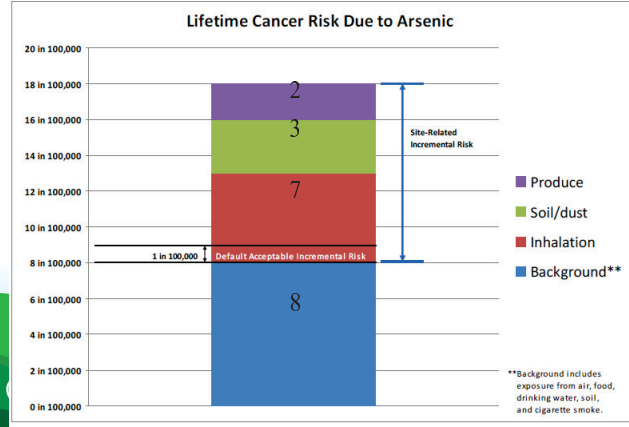
Total Cancer Risk: 10 in 100,000 (1 in 10,000)

Note: neighbourhood with highest risk differs by pathway



ARSENIC

Cancer Risks



ARSENIC

Cancer Risks: Trail population context

Risk Level	Expected number of cancer cases in Trail in a lifetime* (75 yrs)
BC Default acceptable level for lifetime incremental risk (1 in 100,000)	0.1
Upper Limit of Risk: lifetime incremental risk, Trail area (1 in 10,000 i.e. 10 in 100,000)	1
Background lifetime risk for any type of cancer (approx. 1 in 4)	2500
Background lifetime risk for lung cancer (approx. 1 in 25 in B.C. - 2001-2005 stats)	380

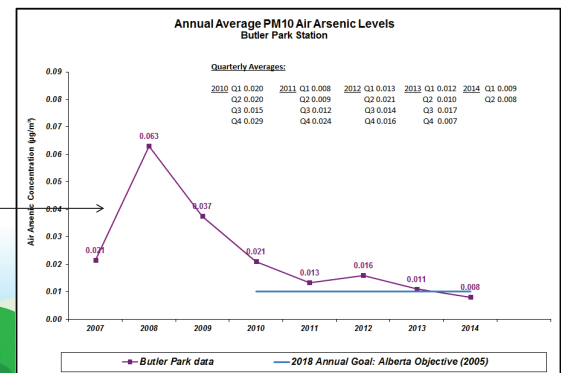
* Assuming a constant population of 10,000 in Trail and that these upper limit risk levels apply to everyone in the population, which is conservative



ARSENIC

Air Quality Trend

HHRA was completed in 2007/2008 – Arsenic in air has improved since then and will further improve with the Fugitive Dust Reduction Program



CONCLUSIONS



Summary

- Preventing and reducing lead exposure is THEP's main focus.
- The risk from arsenic means about one additional case of cancer in the community every 75 years; this risk has and will continue to reduce as air quality is improved.
- Cadmium risks are lower than BC's default acceptable levels.
- Thallium levels measured in Trail are well within the World Health Organization guidelines.

THEP

- The THEP is a multi-faceted program with a main focus on lead exposure reduction, and a main target audience of families with young children.
- The Fugitive Dust Reduction Program will make the biggest contribution to reduced levels of metals in the community.
- THEP will continue to monitor lead, arsenic, cadmium and thallium.

THEP

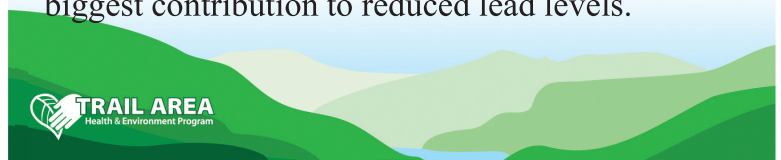
- The Trail Health & Environment Program's existing programs, monitoring, and commitment to continuous improvement are the right actions for our community.

EXTRA SLIDES FOR REFERENCE



LEAD

- Preventing and reducing lead exposure is THEP's main focus.
- The main pathway of concern is hand-to-mouth ingestion of dust by young children
- THEP monitors lead levels by blood lead testing of young children
- The Fugitive Dust Reduction Program will make the biggest contribution to reduced lead levels.



ARSENIC

- The **Upper Limit** of **cancer** risks from arsenic in Trail, mainly due to breathing air, is 1 in 10,000 which exceeds BC standards.
- 1 in 10,000 means about one additional case of cancer in the community every 75 years.
- The BC Cancer Agency studied cancer levels in Trail in 1992 and found no evidence of increased risk of developing cancer.
- The **Upper limit** of **non-cancer** risks are about equal to BC's default acceptable level



ARSENIC

- THEP monitors arsenic in air, dustfall, soil and produce.
- Arsenic in air has improved since the 2007 HHRA. The Fugitive Dust Reduction Program will further reduce arsenic and other metals in air and dust.



CADMIUM

- Cadmium risks are lower than BC's default acceptable levels (for both **cancer** and **non-cancer** risks)
- Studies of kidney disease (the main risk for cadmium) in Trail have found the same levels as in the Southern Interior.
- THEP remediates garden soil, monitors produce, and provides tips to reduce exposure.

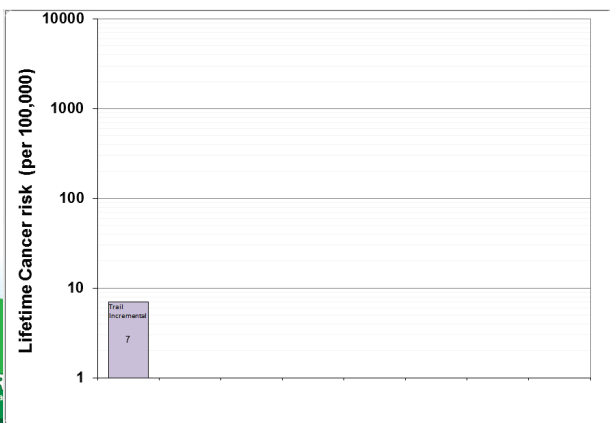


THALLIUM

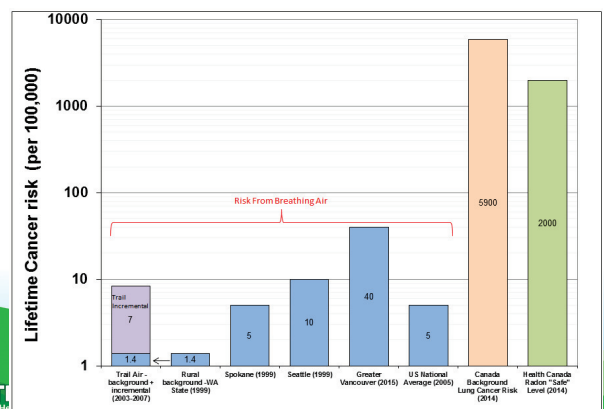
- Thallium levels measured in Trail are well within the World Health Organization guidelines.
- THEP will continue to monitor thallium levels.
- THEP doesn't have public communications about thallium because the risks are well within guidelines.



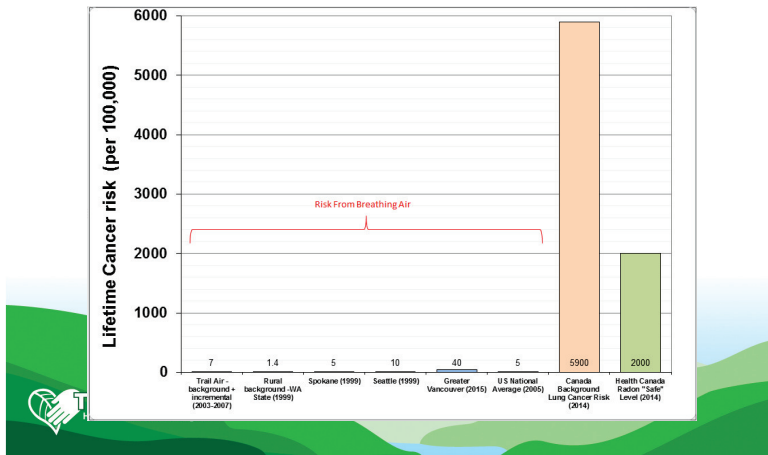
Trail Cancer Risks vs. Background – Breathing Air



Trail Cancer Risks vs. Background – Breathing Air – Log Scale



Trail Cancer Risks vs. Background – Breathing Air – *Linear Scale*



HOME & GARDEN 2014 Annual Report



Summary to the THEC
February 17, 2015

Healthy Homes



HFHH Support Provided to Families	
Dust Buster Kits	104
Yard and Garden Kits	90
Household Vacuums	124*
Paint Screening	31
Yard Improvement	33
Sandboxes	46

* In 2014, 41 vacuums were provided to families who received a HH visit either in 2012 or 2013

Healthy Homes

107 HH Visit

- 161 families identified
- 12 families moved out HFHH area
- 42 families declined visit



Significant improvement in service times (days) over years past

Healthy Homes Visits Service Days *	2012	2013	2014
	299	114	39

* Initial contact to HH visit

Community Outreach

ENGAGEMENT ACTIVITIES

- **Events:** Blood Lead Clinics, H&G Days, Trail Downtown Market, Teddy Bear Picnic, HFHH Outreach Tables, Ages & Stages
- **Presentations:** MCFD and Prenatal Groups
- **Participant:** Putting Children & Families First, IncrEdible Trail Green Route, Greater Trail Success By 6 Community Table

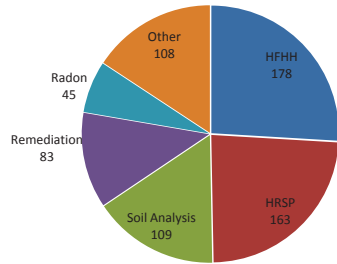
Summary of Events from 2012 - 2014

Event Name	New Families
Interior Health Blood Lead Clinic	247
Word-of-mouth	41
Interior Health - Public Health	24
Walk-in or phone-in	15
Expectant Parent Event	15
Building Beautiful Babies	7
IH Baby Clinic	5
Pre-natal Class	3
Home and Garden Days	2
Ready Set Learn	2
Teddy Bear Picnic	2
Walmart	2
Ages and Stages	1
Newsletter	1

Community Program Office

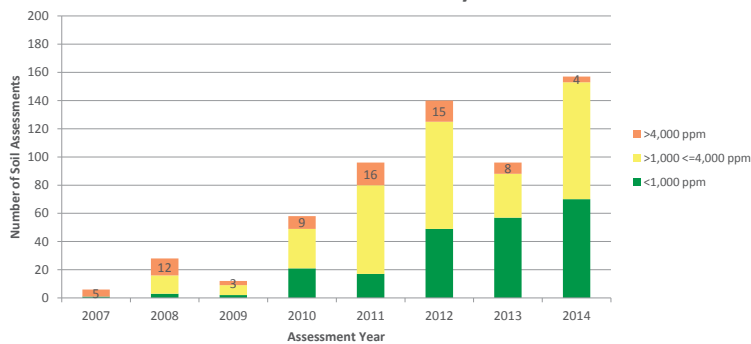
The Community Program Office logged **686** interactions with the public in 2014!

CPO Interactions in 2014



Yard Soil Assessment

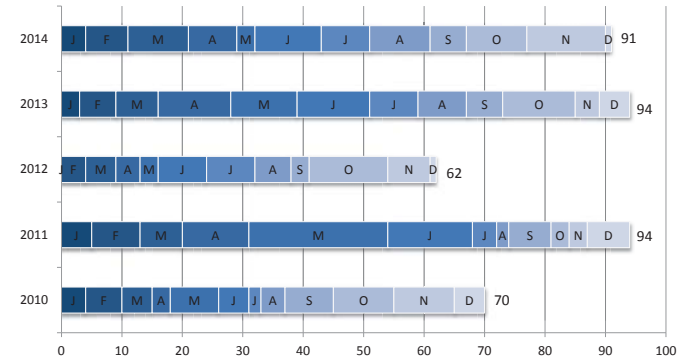
Yard Soil Assessments by Year



Type	# Sampled	Number Above Action Levels	% Above Action Level
HH Yards	84	1 (>4,000 ppm lead)	1.2%
		31 (needed improvement)	36.9%
Other Yards	73	3 (>4,000 ppm lead)	4.1%

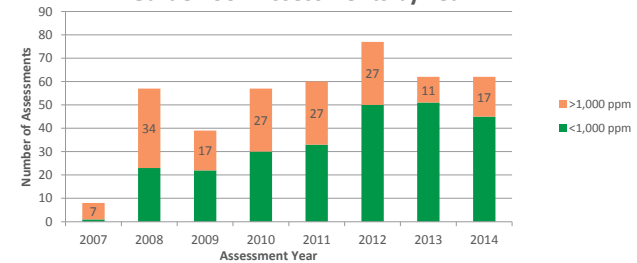
HRSP

Home Renovation Support Requests by Month and Year



Garden Soil Assessment

Garden Soil Assessments by Year



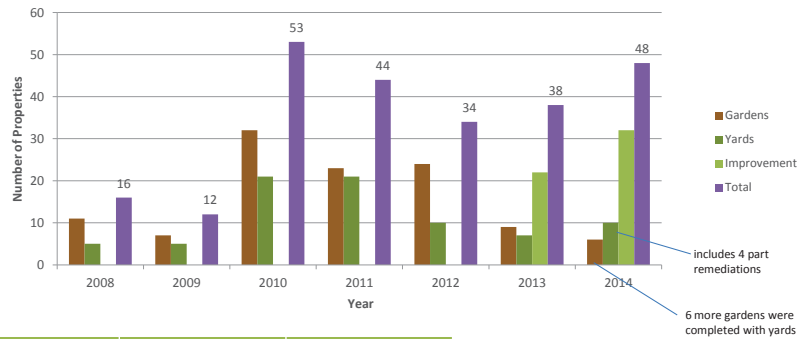
Type	# Sampled	Number Above Action Levels	% Above Action Level
Vegetable Gardens	62	17 (>1,000 ppm lead)	27.4%

Soil Assessment Service Days *	2012	2013	2014
	110	104	32

* Signed consent to assessment

Yard Improvement & Remediation

Summary of Remediation and Improvement Work by Year



Remediation Service Days *	2013	2014
	28	71

* Signed consent to remediation completion

Yard Improvement & Remediation

Prioritization of Properties

Type of Work	Total for 2014	Assessment Year			
		2014	2013	2012	2011 or earlier
Yard Improvement	32	14	11	2	5
Garden Remediation	12*	4	7	-	1
Yard Remediation	10	3	3	2	2

* 6 of these were completed as part of yard improvement or remediation

Other Work

- Soil Assessment of non-residential properties including AM Ford, Casino Rifle Range, Tadanac Tennis Courts
- Lead Safe Home Renovation manual (in progress) that outlines procedures for lead-safe renos for Contractors and Do-It-Yourself (DIY) Home Renovators
- Continual database improvement



2015 Goals

- Connect with all eligible HFHH families and work towards THEC objective of 75% HFHH participation rate
- Offer yard improvement to 21 HFHH properties and any new high priority properties
- Offer remediation to 4 full yards and 11 gardens as part of the community remediation program for 2015 and any new high priority properties
- Continue to develop Lead Safe Home Renovation for Contractors and DIY renovators

