

# 5 SUBJECTS / SUJETS

SUBJECT/SUJET SO<sub>2</sub> Emissions



Northwest  
Territories Legislative Assembly

Memo

To \_\_\_\_\_ Date \_\_\_\_\_

SO<sub>2</sub> emissions

CLASS SC

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Flin Flon ± 650 tpd

Sudbury ~ several '000 tpd

after spending  
\$200-300  
M

→ reduced by  $\frac{1}{3}$



SUBJECT/SUJET SO<sub>2</sub> Emission

PROFESSOR/PROFESSEUR \_\_\_\_\_

**NOTES:**

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**ASSIGNMENTS/DEVOIRS**

DATE	ASSIGNMENT / DEVOIR	DUE / À REMETTRE LE:

**EXAMS/EXAMENS**

DAY/JOUR	DATE	TIME/HEURE	PLACE/LIEU

940711

Wayne Fraser - ABM & S

204 687 2171

- daily emissions at Flin Flon are  $\pm 650$  tons/day
- 0.6 to 0.7 % in the off gas
- Ground Level Concentration at Flin Flon not to exceed 0.34 ppm.
- scrubber?
- increased stack height?

940711

Raji Menon - Minniq Assoc. of Canada

613 - 233 - 9391

- control of emissions?
- ground level concentration?

Charlie  
Ferguson  
Inco

# Guideline for Ambient Air Quality

- issued 24 June 1994 by  
Silas Arngna'naaq  
Renewable Resources Minister

Emery Paquin  
Director

873 7659

N.W.T. Renewable Resources  
Environmental Protection Division

$\text{SO}_2 \mu\text{g}/\text{m}^3$

annual - 30

24 hr - 150

1 hr - 450 = 0.17 ppm.

$\text{TSP} \mu\text{g}/\text{m}^3$

annual - 60

24 hr - 120

940714  
Mtg to ~~Dr~~ Emery Pagani - Renewable Resources  
Jim Sparkling - " "

- SO<sub>2</sub> Guideline
- SO<sub>2</sub> monitoring has been continuous from March 1993 located at the top of City Hall
- Jim Sparkling to send over some data
- Jim says: when the wind blows from the north, there are exceedences of the 1 hr. guideline  $\pm$  30-40% of the time
- the NWT is looking for reduction in ambient concentration
- the critical season is the growing season
- joint modelling of stack emission vs. ambient concentration at 50:50 cost sharing
- the ambient guidelines are considered to be "ultimate" levels.
- in stack monitoring? shared cost? particulate plus SO<sub>2</sub>

- develop terms of reference for modelling to study of economic feasibility of increased stack height

Snow Core Survey - conducted in March of 1994

940727

Jim Sparling

re: terms of reference for  
SO<sub>2</sub> Air Quality / Dispersion  
Assessment

- rec'd Outline of Skookumchuck Pulp Mill Upgrade Environmental Impact Assessment

→ Study for comment re: terms of reference which Jim will draft for next week's mtg

- Lake effect  $\approx$  smooth wind flow
- Period for evaluation?

- when will the study proceed?
- who will do the work?
- use airport meteorological data, however minisite data would be the best.

Follow up mtg. to Jim rent  
Wed Aug 3 @ 1:30 p.m.

Modelling Requirements: Alberta, B.C.,  
Ontario have protocols developed



Mtg @ Jim Spaulding

940804.

- evaluate parameters :
  - stack  $\phi$
  - gas velocity
  - gas temperature
  - stack height
- what costs?

Stage 1 - Modelling of Performance  
(~~Env.~~ Environmental Quality)  
based on physical (plant)  
and meteorological conditions  
- # of exceedences/year?

Stage 2 - Provide Budget costs  
for perceived optimum  
configurations

- Jim needs mass balance emission rates?
  - how far back can we go?
  - how consistent are the emissions?
  - routine reporting?

Next mtg Wed Aug. 10 1:30 p.m.  
at Giant

940810

Mtg = Jim Sparling

→ wrt mass balance data, Paul O'Hara  
will be providing a  $\pm 3$  yr. reports  
how tight will the data be? ie -  
can it be in 24 hr days?

→ Jim also needs regular updates

re : Terms of Reference for the  
air dispersion study → we should  
be ready to get pricing in 1-  
wks.

- memorandum of understanding

- meet w Jim - next ~~Tuesday~~ <sup>Monday</sup> Aug. 15

1:30 p.m.

at Scotia Ctre 7th Flr.

940816

Mtg = Jim Sparkling

- the contractor should be expected to define "Sensitivity Evaluation"
- return proposals by September 26
- award by October 11
- modelling results mid December: meeting to review sensitivity analyses
- final report early Feb 1995 (draft report mid January)

± \$10,000 total cost - dependant on availability of input information

941004

MHg = Jim Spooling

- cost to be negotiated ↓
- cost to be fixed.

- modeller in Halifax
- project manager in Vancouver
- Proceed to talk with the local manager  
Gary Strong
- travel costs? (disbursements)

- Memorandum of Understanding needs to be signed off.

→ get the mass balance #15 from Paul!!

94 10 12

Mtg @ Jim Sperling  
Gary Strong - Dillon

- Administrative Work via YK.
- travel costs are kept low as a result of cost sharing
- Susan Eyre in YK for an initial mtg. - ? -
- Susan Eyre in YK for progress mtg. Nov. 28.
- Fixed Price is reg'd. - Agreed

Billing {

- 50% to RYO
- 50% to ENWT

→ Dillon cannot move off a \$13300  
fixed price + EST

- Susan Eyre has a working relationship @ the modeller (Hilburn) and this is a key component for her selection as manager.

- Mass Balance Data will be used to model emission dispersion

94 11 28

## Meeting @ Legislative Assembly

Silas Armaniac

- Presentation by Emery Paquin

- Giant Mine is the most significant source of arsenic in the Yellowknife area
- Pollution control equipment is 99% effective, however 20-30 kg/day are released
- Present risk to human health from arsenic is acceptable.
- to minimize the risk to human health control equipment at the mine should be operated & maintained at optimum levels.

- November 1994  $\text{SO}_2$  emissions

→ exceeded the NWT guideline of  $450 \mu\text{g}/\text{m}^3$  on 10 hrs

→ exceeded the Federal guideline of  $900 \mu\text{g}/\text{m}^3$  standard on 1 hr.

$450 \mu\text{g}/\text{m}^3$  → vegetation shows some sign of stress due to  $\text{SO}_2$

- inefficient dispersion from the stack causes high loading on rare occasions, ~~there~~ not high emission rates
- Golden Bear has an  $\text{SO}_2$  scrubber; it was opened in  $\pm 1988$  is it still operating?

→ Continuous emission monitoring at the stack is required to evaluate effectiveness of any modifications

### Options

- Cap the existing  $\text{SO}_2$ , As production - rates
- Increase ~~production~~ dispersion
- Collect  $\text{SO}_2$
- Pressure oxidation

Degrees of protection for  $\text{SO}_2$

- vegetation
- sensitive humans
- no upper limit

Tony Whitford: would like to see total emissions reduced

Tony Whitford: would like to see a garden close to the mine site which ~~it~~ would be nurtured & monitored to act as an indicator of environmental effects.

- 2 stack tests conducted in 1991  $\Rightarrow$  50-65 tpd  $\text{SO}_2$
- some ill effects are to still continue to be experienced by members of the local community if the status quo is maintained.
- continuous monitoring should be expanded @ \$25,000/unit + operation costs
- are the excursions noted in November 1994 typical of all year? NO  $\rightarrow$  this was atypical
- life of Giant Mine? - 7 yr. reserve

Time Table? Dispersion Study complete in Feb 1995  $\rightarrow$  review of options thereafter.



Frank Hamilton - maintenance of  
existing equipment

Kevin

- rigorous pm. program
- Renewable Resources are more than welcome to come to the site to review practices etc.

Emery

- last week Jim Sparling etc. were on site to review the operation.