



Northwest
Territories Minister of Renewable Resources

~~At H. H. H. H. H.~~
ERIK MAASEN

JUL 05 1993

Mr. Mike Werner
Mine Manager
Royal Oak Mines Inc., Yellowknife Division
P.O. Bag 3000
Yellowknife, NT X1A 2M2

Dear Mr. Werner;

Attached please find a copy of a report titled *AN INVESTIGATION OF ATMOSPHERIC EMISSIONS FROM THE ROYAL OAK GIANT YELLOWKNIFE MINE*. This report contains the technical findings of the investigation undertaken by Renewable Resources staff in response to a request made on 22 April 1991 under the Environmental Rights Act. Field studies undertaken for the investigation were completed by the end of 1992.

The investigation concluded that Royal Oak Giant Yellowknife mine roaster stack emissions are the most significant source of arsenic found in Yellowknife air. Since the late 1940's when operation of the roaster started, improvements have been made at the mine to control and reduce arsenic emission rates. Close to 99% of the total arsenic is now filtered from the roaster gases, leaving 20 to 30 kilograms of total arsenic that are released to the atmosphere each day.

Since 1988, total arsenic levels detected in downtown Yellowknife air on average has been less than 0.01 micrograms per cubic metre (g/m^3). The Ontario 24 hour average total arsenic limit of $0.3 \mu\text{g}/\text{m}^3$ has only been exceeded on two occasions since 1978 and both of those high measurements were recorded in 1988. Continued maintenance and operation of arsenic emission control equipment remain of critical importance if the current low levels of arsenic in Yellowknife air are to be sustained.

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This is actually 30-35 tonnes/day

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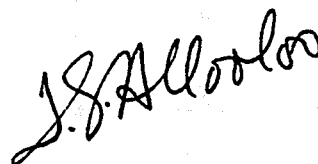
The Royal Oak Giant Yellowknife Mine roaster stack is the major source of sulphur dioxide (SO₂) in Yellowknife air. Presently, SO₂ emission rates from the roaster stack are considered to be in the range of 50 to 65 tonnes per day. It was the only identified source contributing to SO₂ levels found to the north of the mine. In Yellowknife to the south of the mine, the roaster stack is the major source of SO₂ but there are also minor sources that contribute to detectable background levels.

Monitoring in downtown Yellowknife showed that levels of SO₂ in populated areas periodically exceed national air quality objectives when the wind blows from the north. When elevated SO₂ levels do occur, these episodic events usually last for a short period. Elevated levels are also occurring in other directions from the roaster stack.

Damage to trees from high levels of SO₂ was found along the Vee Lake Road as far north of the roaster stack as 5 kilometres. This is within the range where elevated SO₂ levels were measured.

Although no recommendations for actions have been included in this report, the findings of the investigation will now be considered by this Government to determine if measures need to be undertaken to protect the environment. If you wish to discuss the findings of this investigation or what actions should be considered by Royal Oak Giant Yellowknife Mine, please do not hesitate to contact Mr. Emery Paquin, Assistant Director of the Environmental Protection Division in Yellowknife at 873-7654.

Sincerely,



Titus Alloo

Attachment