

COMMENT RESPONSE

Preliminary Air Quality Minor Permit No. AQ0978MSS01
for Alaska Gold Company (AGC)
Rock Creek Mine (RCM)
December 22, 2006

The Department of Environmental Conservation (the Department) held a public comment period from October 19, 2006 through November 20, 2006 regarding AGC's RCM. AGC proposes to construct and operate a rock crusher at the Rock Creek Mine located 6.2 miles north of Nome, AK on the Glacier Creek Road. The RCM will be an open pit mine that operates 24 hours per day, 365 days per year.

The Department received comments from 21 entities. Comments were received from Nome residents, the Northern Alaska Environmental Center, and AGC. Many of the comments covered the same topics. Because of this, the Department summarized the comments by topic. The actual comments submitted are included as Appendix A to this document.

Below is the Department's consideration of comments.

Comment 1. Concerning the Air Quality standards that are to be met, I do not believe that AGC will be able to comply with maintaining Nome's air quality to a standard that would be considered safe. Nome's air quality was tested in 1986 between October 27 and November 1 by the Centers for Disease Control's Agency for Toxic Substances and Disease Registry (see www.atsdr.cdc.gov/HAC/PHA/alaskaag/agc_pl.html) It tested the air within Nome's city limits for mercury vapors and particulates. During the time of testing conditions were not favorable for a true representation of the mercury content in the air. The report contains language that states that higher levels of mercury may be present in warmer, dryer months that could represent a potential danger to public safety. There were flaws with the testing that were not followed up on as far as I can tell. AGC was made to clean up the site that contained the highest levels of arsenic and mercury, a playground where I and many of my friends played during our younger years in the 1970's. Air quality for arsenic particles was not tested at the time, however, soil was tested and very high levels of mercury and arsenic were found at the playground.

More environmental impact studies need to be done prior to AGC implementing this project. The studies need to be done during all of Nome's seasons and in all of the various stages of dust and vapor release at sites throughout Nome and the Snake River Valley. There is a requirement in the state mining regulations that a third party group conduct the monitoring of the mining sites during operation. A third party group such as the EPA's region X should be monitoring the effects of this project prior to, during and after startup of operations. Air quality should be tested for mercury and arsenic particles and vapors during this time.

Response: *The Department has been told by the Alaska Department of Natural Resources (DNR) that there is no requirement in state mining regulations requiring third party monitoring. The Department also does not have any regulations requiring third party monitoring of mining operations. AGC conducted studies on the concentrations of metals in the development rock and ore at the RCM and calculated annual emissions of metals. The resulting predicted emissions are well below any thresholds for Hazardous Air Pollutants established by the United States Environmental Protection Agency (EPA) and are not of a quantity which would violate Department regulations protecting human health.*

Comment 2. The Rock Creek Mine Plan of Operations Volume 1 Project Description dated May, 2006 contains medical plans for both operations. The plan for the safety of the employees working at both

places is not specific enough for my tastes. AGC does not mention whether or not employees will be given access to antidotes for cyanide gas, there is nothing in their plan regarding the possibility of arsenic and/or mercury poisoning and how that will be handled. They speak only of the local hospital where I work and know for a fact that there are not enough chelating agents kept at the hospital for heavy metal poisoning and as far as I know there is one antidote kit for cyanide poisoning. I saw nothing in the AGC's medical emergency plan that addresses these issues. Furthermore, if heavy metal poisoning does occur within Nome or at the Rock Creek crushing location the hospital is not equipped with a spectrometer that would tell us the levels of the offending metals which we would test using the patient's urine. The testing for heavy metals is what we call "a send out lab", however, by the time the specimen arrives at a lab facility that can test for heavy metals it is hours if not days later that we get the results back and the results will not be useful at all to medical staff as the concentrations of the metals in the urine may not reflect the actual values at the time the patient was brought to us for medical treatment. To me, the Company is being haphazard about keeping the community of Nome safe.

Response: The Department has no regulatory authority through this permit to require modifications to the medical plans covering the mining operations.

Comment 3. AGC dredges are not maintained in a safe manner and are left to rot into the tundra. One of the dredge ponds claimed the life of one boy who was swimming and was sucked into a drain pipe. Children and adults continue to check out the dredges and they have no "Keep Out" or "No Trespassing" signs. AGC is not concerned with the safety of the community unless it is forced into doing something about their messes or face monetary penalties. (Photos of dredges were enclosed)

Response: AGC's maintenance of dredges is outside of the Department's regulatory authority as it applies to this permit.

Comment 4.

There are no conditions in the permit requiring the trucks to be covered while hauling ore between the Big Hurrah Mine (BHM) and the RCM.

Response: The AGC has stated to the Department that the material being transported is run-of-mine ore, not concentrate. The material is typically in pieces with dimensions of 2 to 3 feet per side. Smaller material will be present with the larger pieces. The loads will not be covered because fugitive dust emissions are not expected during hauling because of the size of the material. The Department has added a condition to the final permit to require the AGC to monitor fugitive dust from the haul trucks within the RCM.

Comment 5.

The road that AGC trucks would be using is also the same road that is used to show tourists the historic sites. The dust would definitely impact Nome's tourism business and possibly land some of the people who come here in the hospital with respiratory problems.

Response: The Department has no regulatory authority through this permit to include permit conditions to control dust on the road between the RCM and the BHM because the road is open to the public. The Department has been told by the Alaska Department of Transportation and Public Facilities (DOTPF) that they have funding in the short term to provide dust control on the state maintained roads. The Department has also been told by DOTPF that they will not impose reduced speed limits to reduce dust generated by traffic as directed by DOTPF Policy and Procedure Number 05.05.020 dated June 15, 2000. The Department suggests to members of the public concerned about

dust from the state maintained roads that they work with DOTPF employees and their state legislators to ensure DOTPF has adequate funding to provide dust control, or to request paving or other measures that may be necessary. If road dust does become a significant health problem, members of the public can also request the department to monitor ambient particulate matter, and if elevated concentrations are recorded, require control of emissions through department authorities outside of the permit program..

Comment 6. Many of the roads are built from old dredge tailings and could contain high levels of arsenic and other metals. Who knows how many people's health problems are related to dust?

Response: Please see the response to Comment 5.

Comment 7.

The Alaska Department of Transportation (DOT) has no extra funding to maintain the road between the BHM and the RCM in satisfactory condition with the addition of the AGC trucks.

Response: Please see the response to Comment 5.

Comment 8. Dust from roads can destroy the food value of subsistence foods. Road dust controls should be used that are non-toxic and effective during freezing temperatures. It is suggested that soybean oil soapstock be used instead of calcium chloride for dust control.

Response: Without first determining that air quality has been impaired, the Department cannot require the DOTPF to use a particular type of dust control. Please see the response to Comment 5.

Comment 9.

How will dust be monitored on the road between the BHM and the RCM?

Response: Please see the response to comment 5.

Comment 10. How will dust be monitored at the RCM?

Response: Please see response to Comment 11.

Comment 11. There is no monitoring of emissions required. Who is responsible for monitoring emissions? Is there a state law which requires DEC to get permission to come to the site to check the records of emissions? Will DEC have an office and inspector in Nome to monitor the pollution in the air?

Response: Conditions 5 through 6 of the preliminary permit require source testing, ongoing monitoring of emissions for the conveyor transfer points, and monitoring of the pressure drops in the baghouses to ensure the baghouses are functioning properly. The boilers, heaters and furnaces are small emission units and the Department does not believe monitoring of these units is necessary. Condition 11 of the preliminary permit requires AGC to monitor several sources of fugitive dust. Condition 28 of the preliminary permit allows the Department to perform an inspection of the premises. The Department will not have an office or an inspector in Nome. The Department has added a condition to the final permit requiring AGC to monitor the fugitive emissions from the pit.

Comment 12. Emission estimates are based on inadequate data because the permit does not identify makes, models and years of equipment.

Response: AGC estimated emissions from the manufacturer's data for the baghouses. AGC also used manufacturer data to estimate emissions from their emergency generators. The emissions from the other equipment which consists of heaters, furnaces and boilers was estimated using EPA's AP-42

emission factors. The Department believes using AP-42 emission factors to estimate emissions is an acceptable method for small units of this type.

Comment 13. The permit does not address the effect of wind carrying dust and emissions from the mill site.

Response: AGC used one year (2004) of site-specific surface data and concurrent upper air data collected by the National Weather Service (NWS) at the Nome airport in their ambient analysis (computer modeling). AGC's analysis adequately shows that operating their emission units within the requested constraints will not cause or contribute to a violation of the Alaska Ambient Air Quality Standards (AAAQS) provided in 18 AAC 50.010

Comment 14. The permit does not state how the connecting conveyors will be covered.

Response: Condition 5.2 of the preliminary permit requires ongoing monitoring of the conveyor transfer points to ensure the state standard of a 20% maximum reduction of visibility is being met. AGC must also comply with the federal standard of a 10% maximum reduction of visibility but not through this permit. Covers should be adequate to accomplish this.

Comment 15. AGC has minimized emissions to obtain this permit.

Response: Please see responses to Comment 11 and Comment 12.

Comment 16. Permit does not look at the entire project and does not include Big Hurrah emissions. A major source of fugitive dust will be from ore haul trucks traveling between Big Hurrah pit and the RCM. There are many subsistence summer camps along this route and prevention of dust contamination along these camps must be addressed in writing, so all entities involved (DEC, AGC and AK DOT) know their obligations.

Response: There are no activities taking place at the BHM which require an air permit from the Department. See response to comment 5 regarding dust on the road between BHM and RCM.

Comment 17. Permit does not take into account fugitive road dust and AGC asserts they will be able to reduce road fugitive dust emissions by 85% (when other applicants generally indicate a 50% reduction). 85% is unrealistic at best, especially when temperatures are below 32 F for 9 months of the year and dust suppressants will not be used during these times. In dry, cold times of the year with little snow cover, dust will still be an issue and it must be addressed. AGC must have a detailed dust plan (more extensive than the current fugitive dust plan) including specific scheduling indicating how often they plan to water the haul roads and a detailed operational plan when conditions are dry and cold

Response: While other applicants have assumed a 50% reduction in fugitive dust emissions, the 85% reduction assumed by the AGC is not unheard of. The 2004 Red Dog Mine application assumed an 89% reduction in fugitive dust emissions. The Department investigated the effect on the PM-10 impact in the ambient analysis by assuming a 42.5% reduction of fugitive dust emissions and remodeled the RCM. PM-10 impacts were still well below the AAAQS. Condition 11 of the preliminary permit requires AGC to monitor dust from the roads within the mine on a daily basis. The Department has added a condition to the final permit to require a subsequent fugitive dust control plan if the current plan is found to be inadequate.

Comment 18. Dust from blasting is not mentioned in the permit or the fugitive dust plan.

Response: *It is not technically feasible for AGC to control dust from blasting. The Department has modified condition 11 of the preliminary permit requiring AGC to monitor the fugitive emissions from the pit.*

Comment 19. A source test for particulate emissions is required on baghouses only at time of startup, the baghouses should be subject to periodic source testing to ensure proper baghouse function.

Response: *The Department believes that the required daily monitoring of pressure drops and maintenance log requirements set out in Condition 5.3 of the preliminary permit are adequate to ensure the baghouses are operating properly. If at any time the Department suspects a baghouse may not be operating properly Condition 12 of the preliminary permit allows the Department to request a source test to ensure compliance with the permit. The Department did not add any periodic source testing requirements for the baghouses to the final permit. The Department did add an initial visible emission source test for the baghouses to the final permit.*

Comment 20. AGC should be required to store a spare baghouse liner per baghouse on site. The permit only indicates AGC has 72 hours to replace a baghouse liner in the event of a malfunction but does not take into account difficulties transporting goods to Nome.

Response: *Each baghouse operates with multiple bags. The Department has modified condition 5.3 of the preliminary permit to require an adequate supply of spare bags be kept on the premises.*

Comment 21. The permit does not address what will happen to the dust collected by the baghouses. The dust must be disposed of in such a way that it does not become airborne again.

Response: *The AGC has stated dust from the baghouses will be reprocessed through the crushing and grinding circuit. The Department has added a condition to the final permit requiring AGC to take reasonable precautions to control fugitive dust during reprocessing of the dust from the baghouses..*

Comment 22. The permit does not require used equipment to be source tested for compliance at startup. The permit requires either a manufacturer's certification or source testing within 60 days of startup. This is unacceptable for used equipment as time causes efficiency to decline. Any used equipment must be source tested for compliance.

Response: *Condition 5.1 of the preliminary permit requires either a manufacturer's certificate or a source test with 180 days for the emergency generators. Because these generators are classified as emergency generators they cannot be operated more than 500 hours per year. The Department believes a manufacturer's certificate is acceptable even if the generators are used because of their limited operation.*

Comment 23. In addition to dust control, the permit also seems lacking in how it addresses the bag housing system at the mill site. How often will these bags be cleaned? What is the procedure for regular mill operations while these are being changed? There also are questions about the lack of bag housing on the conveyor transport points (16-18, 31-35, 42...). It seems that the permit needs to require that every point have a control device in place, for the safety of the workers, as well as the general public..

Response: *The permit does require the permittee to perform regular maintenance considering the manufacturer's or operator's maintenance plan. The permit requires AGC to shutdown a baghouse within 72 hours of discovering a damaged bag. A baghouse cannot be restarted with a damaged bag. AGC designed the crushing and grind circuit to enclose the largest sources of dust within the baghouse*

system. The conveyor transfer points are subject to state and federal regulations for visible emissions, see response to Comment 14.

Comment 24. The assumption that pit dust will be minimal due to wall moisture seepage is highly speculative. Previous open pit placer mining in the area by AGC produced significant fugitive dust during blasting operations when temperatures were sub freezing and increased significantly when temperatures were sub zero. The dust from equipment working in the pit will also significantly increase during sub zero conditions.

Response: The Department has modified condition 11 of the preliminary permit requiring AGC to monitor the fugitive emissions from the pit.

Comment 25. There have been no public meeting or forum about this permit

Response: The Department allowed 30 days for written comments on the preliminary air permit. The Department does not believe there is any reason that comments received orally in a public meeting would convey any additional information which could not be conveyed in a written comment.

Comment 26. I request a public hearing.

Response: Please see response to Comment 25.

Comment 27. Condition 5.2 – Alaska Gold Company (AGC) believes that the requirements of this condition are excessive. Please amend this condition as follows to make the initial compliance demonstration requirement of this condition consistent with the timing of 40 Code of Federal Regulation (CFR) 60 Subpart LL (Standards of Performance for Metallic Mineral Processing Plants). AGC also requests that the condition be amended as follows to make subsequent compliance demonstration requirements effective but less onerous.

For Emission Units 16 through 18, 31 through 35, and 42 (transfer points that are components of a covered conveyor system) verify compliance by conducting an initial visible emission source test on each unit in accordance with condition 14.1 within 60 days after reaching maximum production or within 180 days after initial start-up, whichever occurs first ~~two days of initial start-up and at least every 60 days of operation.~~ Subsequent to the initial visible emissions test, conduct a visual determination of fugitive emissions test on each unit in accordance with condition 14.1 at least every 180 days of operation. If fugitive emissions are observed from a specific emission unit, conduct a visible emissions source test on that emission unit in accordance with condition 14.1 within 15 days after the visual determination of fugitive emissions test. Attach a copy of the surveillance records to the operating report required under condition 27.

Response: The Department agrees to make initial compliance timing consistent with Subpart LL. The Department does not disagree in principal to using a Method 22 but AGC did not propose compliance tests at a frequency comparable to the preliminary permit condition. Because of this the Department disagrees with AGC's request to change the remaining part of the condition. Unlike a Title V Operating Permit, the minor permit does not require AGC to certify compliance between compliance tests. The Department believes monitoring this type of source only twice a year is inadequate. The Department's GP9 General Permit for rock crushers requires a Method 9 compliance demonstration every 14 days. The Department does not believe requiring a Method 9 compliance demonstration every 60 days is onerous.

Comment 28. Condition 5.3b. -- Please amend the last sentence of this condition as follows to make the requirement more logical. This condition as written requires replacing a worn or damaged bag within 72 hours of discovery even if the baghouse will not be operated during that period. A time limit to replace a bag in a non-operating baghouse is not reasonable.

Replace worn or damaged bags prior to restarting the baghouse or within 72 hours of discovery, whichever occurs later ~~earlier~~.

Response: *The Department has revised the permit so that AGC is not required to replace a damaged bag within 72 hours of discovery if the baghouse is not to be operated but also to require that AGC not operate the baghouse for more than 72 hours after discovering a damaged bag.*

Comment 29. Condition 5.3c. -- Please amend the last sentence of this condition as follows. Repeating the five year requirement of Condition 25 in this condition is not necessary.

Keep records ~~for five years~~ as set out by condition 25.

Response: *Revised as requested. Conditions 6.2a and 9.6 were revised in a similar manner.*

Comment 30. Condition 6.1 – Please amend this condition as follows to make the initial compliance demonstration requirement of this condition consistent with the timing of 40 CFR 60 Subpart LL (Standards of Performance for Metallic Mineral Processing Plants).

For each baghouse described in condition 1.1 through 1.3, conduct a PM source test on each baghouse in accordance with Section 4 and condition 14.2 within 60 days after reaching maximum production or within 180 days after initial start-up, whichever occurs first ~~of initial start-up~~.

Response: *Revised as requested.*

Comment 31. Condition 9.3 – The meaning of the term “public access review” is unclear. Please amend this condition as follows to clarify the requirement. Please also amend this condition to clarify that either a hard or electronic copy must be maintained, but not both.

Maintain a hard-copy of the approved Access Plan for public ~~access~~ review at the Permittee’s Rock Creek Mine Office ~~and/or~~ electronically on the world-wide-web

Response: *Revised as requested.*

Comment 32. Condition 9.4 – Please delete this condition. This requirement duplicates the requirement of Condition 9.1 to obtain Alaska Department of Environmental Conservation (ADEC) approval of any subsequent version of the Public Access Control Plan.

Response: *Revised as requested.*

Comment 33. Condition 9.5 – Please delete this condition. The ADEC-approved Public Access Control Plan adequately describes the actions that will be taken if an unauthorized person enters the ambient air boundary. Adding this requirement to “correct the situation” introduces a vague and ambiguous requirement that is not necessary.

Response: Disagree. *The Public Access Control Plan refers to ‘indications of the presence of unauthorized personnel’, the Department does not believe this terminology is specific enough. The Department included Condition 9.5 in the preliminary permit to correct this deficiency. If, for example, AGC routinely finds snowmobile tracks in a particular location, AGC should consider additional access control activity. This could include additional surveillance, additional barriers, or other measures. The condition cannot be more specific, because what is necessary to correct a particular situation depends on the specific circumstances. But the daily surveillance log should make clear why the steps taken are appropriate.*

Comment 34. Condition 9.7 – Please delete the second sentence of this condition as follows because the requirement is duplicative of Condition 9.1.

Submit all proposed revisions to the ambient boundary and/or Access Plan to the Department’s Juneau and Fairbanks Offices ~~Office’s~~. ~~Do not implement any change without written Department approval.~~

Response: Revised as requested.

Comment 35. Condition 10.2 – The meaning of the term “public access review” is unclear. Please amend this condition as follows to clarify the requirement. Please also amend this condition to clarify that either a hard or electronic copy must be maintained, but not both.

Maintain a hard-copy of the approved Fugitive Dust Control Plan for public access review at the Permittee’s Rock Creek Mine Office and/or electronically on the world-wide-web.

Response: Revised as requested.

Comment 36. Condition 10.3 – Please delete this condition. This requirement duplicates the requirement of Condition 10.1 to obtain ADEC approval of any subsequent version of the Fugitive Dust Control Plan.

Response: The Department did not delete Condition 10.3 but revised Condition 10.3 by removing the requirement to obtain Department approval before modifying the Fugitive Dust Control Plan, as that is redundant.

Comment 37. Condition 11.1 – Please amend the last sentence of this condition as follows. Repeating the five year requirement of Condition 25 in this condition is not necessary.

Keep the records ~~for five years~~ as set out by condition 25.

Response: Agree, Revised as requested.

Comment 38. Condition 14.1 – Please amend this condition as follows to be consistent with the requested changes to Condition 5.2.

Source testing for the reduction in visibility through the exhaust effluent must be conducted in accordance with the procedures set out in 40 C.F.R. 60 Appendix A, Reference Method 9. The Permittee may use the form in Attachment 3 of this permit. Source testing for the visual determination of fugitive emissions must be conducted in accordance with the procedures set out in 40 C.F.R. 60 Appendix A, Reference Method 22.

Response: Because the Department did not agree to modify condition 5.2 in regards to using Method 22, condition 14.1 was not modified as requested.

Comment 39. Condition 14.4 – Please clarify this condition as follows to use the defined term “air pollutant” instead of the undefined term “contaminant.”

Source testing for emissions of any air pollutant ~~contaminant~~ may be determined using an alternative method approved by the Department in accordance with 40 C.F.R. 63 Appendix A, Method 301.

Response: Revised as requested.

Comment 40. Condition 34. – Please delete this condition. This requirement appears to be more appropriate for a Title V operating permit.

Response: Revised as requested.

Attachment A

Dear Mr Dunn, Mr Wolfe, Mr Crafford, Mr Boles, Mr Ashton and Mr Philip,

My name is Karen McLane FNP-C (Family Nurse Practitioner-Certified) and I have concerns about Nova/Alaska Gold Company's practices past, present and future.

Concerning the Air Quality standards that are to be met; I do not believe that the Company will be able to comply with maintaining Nome's air quality to a standard that would be considered safe. I give you the website where Nome's air quality was tested by the Agency for Toxic Substances and Disease Registry at the request of the Environmental Protection Agency's Region X office;

www.atsdr.cdc.gov/HAC/PHA/alaskaag/agc_p1.html

This study was conducted October 27 through November 1 1986. It tested the air within Nome's city limits for mercury vapors and particulates. During the time of testing conditions were not favorable for a true representation of the mercury content in the air. The report contains language that states that higher levels of mercury may be present in warmer, dryer months that could represent a potential danger to public safety.

There were flaws with testing that were not followed up on as far as I can tell. The Company was made to clean up the site that contained the highest levels of arsenic and mercury, a playground where I and many of my friends played during our younger years in the 1970s. Air quality for arsenic particles was not tested at the time, however, soil was tested and very high levels of mercury and arsenic were found at the playground.

During the Summer and Fall months in Nome dust is scattered to the on and off shore breezes that are part of our natural habitat. Add to that the amount of traffic from large trucks hauling ore from the Big Hurrah site to the Rock Creek site for crushing and our air quality will suffer.

I would also like to point out that in Rock Creek Mine Plan of Operations Volume 1 Project Description May, 2006 the medical plans for both operations. In the website below

<http://www.dnr.state.ak.us/mlw/mining/largemine/rockcreek/pdf/vol1.pdf>

the plan for the safety of employees working at both places is not specific enough for my tastes. The Company does not mention whether or not employees will be given access to antidotes for cyanide gas (their plan for keeping the pH of the holding tanks is well below DuPont's properties, uses storage and handling minimum of 12 per Charlotte MacCay's Bucketline Newsletter that states that the pH will be kept at 9.5 using lime), there is nothing in their plan regarding the possibility of arsenic and or mercury poisoning and how that will be handled. They speak only of the local hospital where I work and know for a fact that there are not enough chelating agents kept at the hospital for heavy metal poisoning and as far as I know there is one antidote kit for cyanide poisoning. I saw nothing in the Company's medical emergency plan that addresses these issues.

Furthermore, if heavy metal poisoning does occur within Nome or at the Rock Creek crushing location the hospital is not equipped with a spectrometer that would tell us the levels of the offending metals which we would test using the patient's urine. The testing for heavy metals is what we call "a send out lab", however, by the time the specimen arrives at a lab facility that can test for heavy metals it is hours if not days later that we get the results back and the results will not be useful at all to medical staff as the concentrations of the metals in the urine may not reflect the actual values at the time the patient was brought to us for medical treatment.

To me, the Company is being haphazard about keeping the community of Nome safe.

Back to the air quality issue; the on and off shore breezes that we get here on the coast do reach up into the Snake River valley where the Rock Creek site is being built. Particles of dust not captured in the proposed containment area (the area immediately surrounding the site) will be carried into Nome by the winds.

I would like more Environmental Impact Studies done prior to the Company implementing their project as planned. I request that the studies be done during all of our seasons and in all of the various stages of dust and vapor release at sites throughout Nome and the Snake River Valley. There is a requirement in the state mining regulations that a third party group conduct the monitoring of the mining sites during operations. A third party group such as the EPA's region X should be monitoring the effects of this project prior to, during and after start up of operations. Air quality should be tested for mercury and arsenic particulates and vapors during these times.

Thank you,

Karen McLane FNP-C

I've placed some of these photos on the citizens alliance group site, but thought that others should know that the dredges are not maintained in a safe manner after they are left to sit and rot into the tundra. One of the dredge ponds near town claimed the life of one of the Tocktoo boys, I think it was Steve, when he was swimming and a drain pipe sucked him into it. The pond was known to those of us who used it as "Warm Pool" and is just North of ACs here in Nome. Sunset dredge at about 15 miles on the Nome-Teller road was burnt down by teenagers playing on it sometime in the late 80s early 90s. The dredge near FAA housing, which I took photos of, also had a fire started by kids playing on it ergo the fence that was put up around it in the late 70s early 80s.

Children and local people who are adults continue to check the dredges out. Dredge 5, as far as I could see, has no "Keep Out" or "No Trespassing" signs on it and one can see in the photos how kids make rafts out of pallets and foam board to float over to the dredge and climb up onto it.

Dredge 6, although a little harder to get to, is still accessible from West beach within easy walking distance for teenagers wanting to find a place to hang out.

My point is simple, Alaska Gold Company is not concerned with the safety of the community unless it is forced into doing something about their messes or face monetary penalties.

Take a look at the attached photos.

Thanks much,
Karen



Dear Mr Dunn,

I have read Nova/Alaska Gold's permit application dated 10-19-06 and have found flaws within the language of the permit request.

#1- The permit does not discuss in specific detail how the road between Rock Creek Mine and the Big Hurrah mine site that the company plans on hauling ore from will be maintained to keep dust down. Our town already has a problem with dust that many people including my grandchildren who have asthma have to live with and take medications for. If the haul road is not maintained to keep the fugitive dust down during the company's proposed plan to run large trucks that may or may not have coverings over them to keep dust from the ore being brought from the Big Hurrah site to the mill from escaping the trucks 24 hours a day, 7 days a week, 365 days a year we will have many, many of the people of my town taken ill due to the increase in the dust.

#2. The haul road has multiple fish camps that people use to dry the fish they catch in this area. With the increase in dust I believe it is possible that the fish that those people will be eating later in the long winter will be further contaminated.

#3. Many of our roads are built from the company's old dredge tailings that could contain high levels of arsenic. I am generalizing this from a study that was done by the CDC in 1986 of our town's water, soil and air that showed that many sites in our town are contaminated with arsenic, which is highest in the soil that was used to build roads and housing foundations.

Please do not allow this permit until the company has a more specific plan that involves the haul road they plan to use. As it stands the application only mentions it in brief and that it is the Department of Transportation's job to maintain the road the company plans on using. My son works for the DOT here and as far as he knows there has been no increase in the monies that would support the maintenance of that road from the state.

I'd also like to point out that the road that those huge trucks would be using is also the same road that many of our tourists are taken down to be shown the historic sites as well as the many birds that can be found no where else in the world in such concentrations as they are here. I think the dust would definitely impact our tourism business and possibly land some of the people who come here in our hospital with respiratory problems.

Thank you,

Patricia Booth

Dear Mr. Dunn,

I am very concerned with the Rock Creek Mine environmental impacts. Not the least of which are the concerns I have over air quality and dust issues.

I have lived in Nome since 1985 and now have a family and two children. Nome can be a very dusty place to live as it is with the amount of truck traffic we currently have. The dust in town and at family camps along the transportation corridor could already be considered marginal in terms of human health. I can not imagine how much worse it will be with the size and regularity of the ore trucks passing the homes and camps. Dust is not good for people, especially children and elders with respiratory conditions already. The permit needs to address the transportation dust issue.

How often will the road be treated for dust control? (calcium chloride really does not last very long). How will dust levels be monitored and who will do it?

I also have some concerns at the mine site itself. I have friends with kids that don't live far from the mine. The rock crushing operations make me a bit uneasy. How will dust levels at the mine be monitored?

I fear that if something is not required legally, economy and expedience will rule and people will suffer for it. I care very much for the people of this community and therefore, I am asking that you do not issue the permit until these matters are resolved.

Respectfully,
Paul Mallory

November 18, 2006

The Alaska Department of Environmental Conservation
Patrick Dunn
Air Permits
555 Cordova Street, 3rd Floor
Achorage, AK 99501-2617
FAX: (907) 269-7508
Email: Patrick_Dunn@dec.state.ak.us

Subject: Comments for the AK Department of Environmental Conservation Air Quality Control Minor Permit No. AQ0978MSS01.

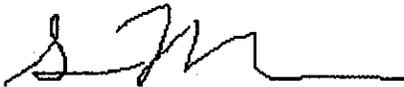
Mr. Dunn;

Below are seven comments on the Alaska Gold Company (AGC) air quality control minor permit.

1. Permit does not look at the entire project and does not include Big Hurrah air emissions. A major source of fugitive dust will be from ore haul trucks traveling between the Big Hurrah pit to the mill at Rock Creek. The haul trucks will travel a dirt road between the two sites, passing many subsistence summer camps along the way. Prevention of dust contamination around these camps must be addressed, in writing, so all entities involved (DEC, AGC and the AK DOT) know their obligations.
2. Permit does not take into account fugitive road dust and AGC asserts they will be able to reduce road fugitive dust emissions by 85% (when other applicants generally indicate a 50% reduction). 85% is unrealistic at best, especially when temperatures are below 32 F for 9 months of the year and dust suppressants will not be used during these times. In dry, cold times of the year with little snow cover, dust will still be an issue and it must be addressed. AGC must have a detailed dust plan (more extensive than the current fugitive dust plan) including specific scheduling indicating how often they plan to water the haul roads and a detailed operational plan when conditions are dry and cold.
3. Dust from blasting isn't even mentioned in the permit or the fugitive dust plan. It needs to be addressed or at least recognized as a dust source.
4. Permit sets emission caps but does not require monitoring. Specifically in regard to particulate emissions from baghouses where emissions are not allowed to exceed 0.05 gr./dscf at startup. A source test is required at time of startup but further monitoring is not required. Pressure drops will be monitored but the permit should require periodic source monitoring to ensure proper baghouse function (with results reported to the DEC to ensure compliance).
5. AGC should be required to store a spare liner per baghouse onsite. The permit only indicates AGC has 72 hours to replace liners in the event of a malfunction and doesn't take into account difficulties in transporting goods into Nome (i.e. storms which halt air/barge traffic for several days).
6. Permit does not address what will happen to dust collected by the baghouses. The dust must be disposed of in such a way that it will not become airborne again.
7. Permit does not require used equipment to be source tested for compliance at startup. The permit currently requires *either* a manufacturer's certification or source testing within 60 days of startup. This is unacceptable for used equipment as time and use cause efficiency to decline. Any used equipment must be source tested for compliance.

Thank you for the opportunity to comment on this permit and if you have any questions regarding the above please contact me.

Sincerely,



<!--[if !vml]-->

<!--[endif]-->

Shauna Mikelich,

Mr. Patrick Dunn
DEC, Air Permits
555 Cordova Street, 3rd Floor
Anchorage, AK 99501-2617
FAX: (907) 269-7508
Patrick_Dunn@dec.state.ak.us

November 19, 2006

Dear Mr. Dunn,

I am writing in regards to the application for an air quality control minor permit submitted by the Alaska Gold Company, no. AQ0978MSS01.

There are many things I find troubling about how permitting has been conducted for this mine, and this application is yet another example of scant requirements and scant information. The people of Nome, and all of Alaska, are entitled to a more thorough analysis and detailed mitigation plans of conditions that directly affect the quality of our lives.

Road dust in traffic corridor:

I find it highly disturbing that a permit regarding air quality does not address the anticipated dust from the intended hourly, daily, yearly trucking of heavy loads from Big Hurrah mine site to the mill at the Rock Creek site.

Road dust is an issue that was raised at the public meeting held June 26, 2006 in Nome. Road dust has been repeatedly referred to in public comments submitted to DNR, DEC and the Army Corps of Engineers. Road dust has been presented as a citizen concern at Nome City Council meetings. And now that a permit is being requested for air quality that includes fugitive dust - of obvious concern to the residents of Nome - it is limited to the mill site, rather than addressing the entire project, which runs from Big Hurrah all the way to Rock Creek.

The people of Nome and the State of Alaska deserve better from their government.

Needless to say, I feel that the permit should not be issued until the entire project, from Big Hurrah to Rock Creek and the connecting traffic corridor, is included, and we have caps, a monitoring plan and an agency enforcement plan solidly outlined.

Fugitive dust at mill site:

The road dust plan at the mill site has a cutoff of 32 degrees. This is unacceptable as one of the dustiest times of the year comes after it is below freezing and there isn't rain to control the dust, and it takes at least several months until there is adequate snow cover. And even snow cover is spotty as sections of the roads blow clear of snow all winter exposing dust to the frequent winds. The permit needs to require a treatment plan that covers dust any time it is present - at any time of the year and at any temperature.

Additionally, the application information is inadequate because Alaska Gold does not state frequency of treatment.

Pit dust control questionable:

Nova Gold says that the pit walls will be damp due to seepage and this will control the dust coming from the blasting in the pit. I find this a questionable assumption and feel that data should be included that supports this assumption. The public is entitled to demonstrated facts.

Additional mill dust concerns:

While the rock crushers will be 'vacuum bagged' in house-sized bags, the permit application doesn't say if or how the connecting conveyors will be covered. The application also doesn't say how often the vacuum bags will be changed or emptied, how their contents will be disposed of, or if they'll have spare bags on site. Without more information the public cannot offer meaningful comment. The permit should be withheld until these specifics have been addressed and presented to the public for review.

Wind not addressed:

The permit does not address the effect of wind carrying dust and emissions out of the identified 'containment area' at the mill site. Wind is a way of life in Nome often unimaginable by people living in other areas of the state or country. What measures have been required or planned for addressing the effect of wind on fugitive dust and emission from the Rock Creek Mill site? Again, this should be clearly outlined in the permit where the public can review it and assess it.

No emissions monitoring:

There are limits on emissions but no monitoring of emissions is required or outlined. Without a monitoring plan and an agency enforcement plan, limits on emissions are meaningless. Again, the public deserves better.

Emission estimates being based on inadequate data:

The permit is being requested for exhaust emissions even though the permit does not yet identify what makes, models and years the equipment will be. The permit should not be submitted until this information is available for public review and analysis; otherwise all of the data presented is purely hypothetical and unreliable.

In closing, we have been told how Alaska Gold wants Rock Creek to a 'showplace' mine, demonstrating that Nova Gold/Alaska Gold can process gold as well as locate it. If we are to believe this then DEC needs to set higher expectations in its permit requirements, and Alaska Gold needs to exceed those standards. This permit falls seriously short on both accounts. Once again, the public deserves better.

Thank you very much for hearing my concerns,

Sincerely,

Sue Steinacher

Alaska Gold Company
Comments Regarding Preliminary Permit No. AQ0978MS001
and the Associated Technical Analysis Report (TAR)

Preliminary Permit No. AQ0978MSS001

1. Condition 5.2 – Alaska Gold Company (AGC) believes that the requirements of this condition are excessive. Please amend this condition as follows to make the initial compliance demonstration requirement of this condition consistent with the timing of 40 Code of Federal Regulation (CFR) 60 Subpart LL (Standards of Performance for Metallic Mineral Processing Plants). AGC also requests that the condition be amended as follows to make subsequent compliance demonstration requirements effective but less onerous.

For Emission Units 16 through 18, 31 through 35, and 42 (transfer points that are components of a covered conveyor system) verify compliance by conducting an initial visible emission source test on each unit in accordance with condition 14.1 within 60 days after reaching maximum production or within 180 days after initial start-up, whichever occurs first two days of initial start-up and at least every 60 days of operation. Subsequent to the initial visible emissions test, conduct a visual determination of fugitive emissions test on each unit in accordance with condition 14.1 at least every 180 days of operation. If fugitive emissions are observed from a specific emission unit, conduct a visible emissions source test on that emission unit in accordance with condition 14.1 within 15 days after the visual determination of fugitive emissions test. Attach a copy of the surveillance records to the operating report required under condition 27.

2. Condition 5.3b. – Please amend the last sentence of this condition as follows to make the requirement more logical. This condition as written requires replacing a worn or damaged bag within 72 hours of discovery even if the baghouse will not be operated during that period. A time limit to replace a bag in a non-operating baghouse is not reasonable.

Replace worn or damaged bags prior to restarting the baghouse or within 72 hours of discovery, whichever occurs later ~~earlier~~.

3. Condition 5.3c. – Please amend the last sentence of this condition as follows. Repeating the five year requirement of Condition 25 in this condition is not necessary.

Keep records ~~for five years~~ as set out by condition 25.

4. Condition 6.1 – Please amend this condition as follows to make the initial compliance demonstration requirement of this condition consistent with the timing of 40 CFR 60 Subpart LL (Standards of Performance for Metallic Mineral Processing Plants).

For each baghouse described in condition 1.1 through 1.3, conduct a PM source test on each baghouse in accordance with Section 4 and condition 14.2 within 60 days after reaching maximum production or within 180 days after initial start-up, whichever occurs first ~~of initial start-up~~.

5. Condition 9.3 – The meaning of the term “public access review” is unclear. Please amend this condition as follows to clarify the requirement. Please also amend this condition to clarify that either a hard or electronic copy must be maintained, but not both.

Maintain a hard-copy of the approved Access Plan for public access review at the Permittee's Rock Creek Mine Office and/or electronically on the world-wide-web.

6. Condition 9.4 – Please delete this condition. This requirement duplicates the requirement of Condition 9.1 to obtain Alaska Department of Environmental Conservation (ADEC) approval of any subsequent version of the Public Access Control Plan.
7. Condition 9.5 – Please delete this condition. The ADEC-approved Public Access Control Plan adequately describes the actions that will be taken if an unauthorized person enters the ambient air boundary. Adding this requirement to “correct the situation” introduces a vague and ambiguous requirement that is not necessary.
8. Condition 9.7 – Please delete the second sentence of this condition as follows because the requirement is duplicative of Condition 9.1.

Submit all proposed revisions to the ambient boundary and/or Access Plan to the Department's Juneau and Fairbanks ~~Offices~~ Office's. ~~Do not implement any change without written Department approval.~~

9. Condition 10.2 – The meaning of the term “public access review” is unclear. Please amend this condition as follows to clarify the requirement. Please also amend this condition to clarify that either a hard or electronic copy must be maintained, but not both.

Maintain a hard-copy of the approved Fugitive Dust Control Plan for public access review at the Permittee's Rock Creek Mine Office and/or electronically on the world-wide-web.

10. Condition 10.3 – Please delete this condition. This requirement duplicates the requirement of Condition 10.1 to obtain ADEC approval of any subsequent version of the Fugitive Dust Control Plan.
11. Condition 11.1 – Please amend the last sentence of this condition as follows. Repeating the five year requirement of Condition 25 in this condition is not necessary.

Keep the records ~~for five years~~ as set out by condition 25.

12. Condition 14.1 – Please amend this condition as follows to be consistent with the requested changes to Condition 5.2.

Source testing for the reduction in visibility through the exhaust effluent must be conducted in accordance with the procedures set out in 40 C.F.R. 60 Appendix A, Reference Method 9. The Permittee may use the form in Attachment 3 of this permit. Source testing for the visual determination of fugitive emissions must be conducted in accordance with the procedures set out in 40 C.F.R. 60 Appendix A, Reference Method 22.

13. Condition 14.4 – Please clarify this condition as follows to use the defined term “air pollutant” instead of the undefined term “contaminant.”

Source testing for emissions of any air pollutant ~~contaminant~~ may be determined using an alternative method approved by the Department in accordance with 40 C.F.R. 63 Appendix A, Method 301.

14. **Condition 34. – Please delete this condition. This requirement appears to be more appropriate for a Title V operating permit.**

Mr Dunn,

I have had another chance to go through this Air Permit Application more thoroughly and have found a few more problems that the company needs to address prior to being allowed the permit.

1. The application does not take into account the entire project. Please see attached "Rock Creek Mine Plan of Operations Vol 1 Project Description May, 2006" and you will notice that their intended project is for not only operations at Rock Creek, but also Big Hurrah, which is approximately 47 miles from the milling operations at Rock Creek. The plan talks of using the Nome-Council Road to haul ore from Big Hurrah to the mill at Rock Creek, yet there is nothing in the language of their proposed air quality application about the haul road and how it will affect Nomites. The road they plan to use is mostly unpaved d/t permafrost causing buckling of DOT projects that attempted to keep road dust down by paving in several places along that road. Paving the road is not an option because the heat from the road allows the permafrost beneath it to melt and cause the buckling, huge potholes, etc., which rends the roads nearly impassable.

In the project description I sent you the company talks of watering the roads behind the trucks during summer months when the ambient temperature is above freezing, however when it freezes here it does not necessarily mean that there is adequate snow coverage. I have seen years when there was simply freezing weather without snowfall well into December and, believe me, it gets dustier in Nome and along those roads. We see many people at the hospital during these months for exacerbations of lung problems of all types...any reactive airway disease or chronic obstructive airway disease or people suffering from TB, which is very prevalent in our region.

The haul road and the Big Hurrah site must be included in their plan and it cannot be left up to the DOT alone. That state entity has no authority and according to people I know who work there, no extra funding to maintain the roads in satisfactory condition for those haul trucks. So, for the company to merely push their responsibility to keep the air quality in Nome from worsening off onto the DOT is not sufficient in my mind.

I would also like to add a couple of more thoughts that are relevant to the road. The DOT has used old dredge tailings from the Alaska Gold stock piles (thats how Alaska Gold has been surviving financially for years while the price of gold was too low to continue dredge operations). These tailings may contain increased

amounts of arsenic which this area is known for having occurring at naturally high levels. Please see the CDC's task force study of 1986 I have attached, which found high levels of arsenic in our soil at several sites in Nome (mercury as well). You will see that when the task force sampled air in Nome the conditions were suboptimal for gathering the necessary data to draw adequate conclusions from and as far as I know the study was not followed up to see if particulates in the air also contained high levels of arsenic. I can tell you anectdotally that I've seen quite a few people in Nome dying of or having to have surgery for gastric cancers, which long term exposure to arsenic can cause. Many of the people here in Nome have fish camps along the haul road, which if trucks going by uncovered (the application has no mention of whether or not the trucks will have covers to minimize dust rolling off the ends of them) will increase the dust that may adhere to the fish that dry on racks in the on and off shore breezes.

Please take my comments into consideration and have the company come up with a better plan to include the entire operation they intend on implementing.

Thank you kindly,

Karen McLane FNP-C

Hello, I have a campsite at Hastings which is on the route used by trucks to haul freight from Big Hurrah. I would appreciate an effort to be made to mitigate the dust from these trucks which blows over our site. I am also an ardent birder. Hastings is an important breeding area for shorebirds and swans, ducks, etc. I don't know what a coating of dust would do on the eggs but it surely is better without such a coating. Safety Lagoon is already designated as an Important Bird Area. Surely there is a means of limiting the dust from the trucks. Thank you. Alice Sullivan

November 20, 2006

Mr. Patrick Dunn
State of Alaska
Department of Environmental Conservation
Air Permits
555 Cordova Street
Third Floor
Anchorage, Alaska 99501-2617

Fax: 907-269-7508

Email: Patrick_Dunn@dec.state.ak.us

Dear Mr. Dunn,

My name is Christine Rowe. I am married with 2 adult sons who were born and raised in Nome, Alaska. I have lived here for 32 years.

I am concerned about the air quality in Nome and as a result of the proposed mining operation at Rock Creek and Big Hurrah. Nome already has a dust problem. The dust is usually very bad in the fall when it is not raining. We have predominant north winds in winter which will carry dust from this mine site directly into Nome by way of the high school. The cold, windy storms come from the north and there are some windy areas that are known to be wind funnels formed by the weather and the geography of the region. The area of Rock Creek is such a windy area. The wind from the north comes down off the ridges over the proposed mine/mill site and blows straight to the populated area of Nome, which is right along the coast and at the mouth of the Snake River. Our roads are gravel. Until the snow comes, in between the rain and the snow is the dust season. The dust can create health problems for people. Eye infections, asthma & other respiratory diseases are caused by breathing dust. I avoid outdoor activities during the dusty periods.

The traffic corridor between Big Hurrah, 50 miles east of Nome and Rock Creek, 6 miles north of Nome has not been addressed in the permit application. I have heard that Nova Gold said the DOT would be responsible for dust control on the State owned highway. This is a gravel road that runs by all the fish camps on Safety Sound. Nova/Alaska Gold has stated that they would be doing 24/7 trucking of ore, 365 days per year from Big Hurrah to Rock Creek. The DOT has stated that there is no funding for snow removal or dust control to make this continuous trucking possible. Many of the people who own camps at Nuuk are retired grandparents who take their grandchildren out to camp to get them away from town in summer. It's clean out there. The air is fresh and the occasional truck or car going by may create some dust but it will be nothing compared to what is being proposed by Nova/AK Gold. The responsibility or mitigation for the upcoming destruction of air quality and enjoyment of life and property for the people who live at Nuuk in summer must be discussed realistically prior to permitting.

The dust created at the mine site has been minimized in the permit application. There will be dust created by the explosives that will be used to create the pit. The wind will carry the dust straight to Nome depositing dirt all along the way. The wind will dry the tailings and create a toxic dust that will blow all over the land from the mine to the ocean coast, which is 6 miles south.

Dust cannot be contained in this environment. We have no trees or land that will block the contaminated air from flowing directly into, over and around our homes and businesses. We welcome the snow that comes and keeps the dust down after summer is over. This is a giant step backwards for the people of Nome.

There is no "emissions monitoring" outlined in the permit application. Who is responsible for monitoring the emissions? Is there a state law that requires you, the DEC, to get permission to come to the site to check the records of emissions? Will DEC have an office and an inspector in Nome to monitor the pollution of our air? I think it will be too expensive for the DEC to send out inspectors and it will be an ineffective way of monitoring the mine/mill site anyway. Nova/Alaska Gold has minimized the emissions in order to obtain the permit. According to the permit

application they don't even know what equipment they are going to have out there as of yet. Certainly the state cannot permit them to operate equipment on a "to be announced" basis.

The health hazards of the proposed mine already far outweigh the economic benefits to Nomeites. The dust in the Nome area is particularly lethal due to the high levels of contaminants in the gravel used to build roads and fill wetlands for housing. The gravel was acquired from past mining activity and contains metalloids including a naturally high level of arsenic. Who knows how many people's health problems are related to the dust? We certainly have our share of health issues in Nome that could be linked to air quality, cancer, Parkinson's disease, heart disease, lung disease, tumors, rheumatoid arthritis and much more. I don't see where adding this mine and its activities are going to increase the quality of life in our town.

The dust is going to degrade the quality of life in Nome. The air quality degradation will decrease the enjoyment and peace of mind that I have in living in this town.

A plan for the control of the dust and the responsibilities needs to be laid out ahead of permitting. The following government agencies are going to have to find out who is going to be responsible or if it is even possible to control dust. The State of Alaska Department of Transportation, the City of Nome, and Nova/Alaska Gold need to communicate on this issue prior to permitting. Nova/Alaska Gold is deriving the greatest economic benefit from the mine/mill operation so they should pay for the expenses associated with dust control and monitoring of dust control. Those expenses need to be discussed prior to permitting. There are expenses involved in monitoring the emissions. Does Nova/ Alaska Gold pay for the travel expenses of DEC people who will come to Nome to monitor the sites? With the current price of gold and the large number of companies wishing to obtain permits, will there be a Nome based office of DEC?

Thanks for the opportunity to comment.

Sincerely,

Christine Rowe

I am concerned that the dust emitted from the crushing facility may impact air quality and will pose a hazard to human health. The near impact would be vehicles on the Glacier Creek Road, local campsites as well as Nome's air quality.

There are EPA standards for the amount of dust per cubic meter. At times it seems probable that these limits will be exceeded. The Rock Creek area has one of the highest levels of arsenic in the world. The permit should be denied. I request a public meeting.

Derrick Leedy

11/19/06

Mr. Dunn;

I write to express my views regarding the air quality permit for the Rock Creek mine outside of Nome. My name is John McLane, and I am the Director of Public Health for the Nome Region. I write in my capacity as a private citizen, but a citizen with a strong background in environmental quality issues and perspective on the particular health problems of the Nome area.

First, may I voice my disappointment with the scope of the permit. There is apparently no permitting process for the Big Hurrah operation nor the transport of materials from Big Hurrah which makes the Rock Creek site economically viable. There are very significant environmental quality issues surrounding this operation, and it deserves scrutiny by the DEC. No Air quality permit should be issued until the entire operation is scrutinized.

At the mill site itself, I am uncomfortable with the parameters and assurances presented by the mining company. The idea of limiting required dust control to days over 32 degrees F is laughable, as many of our regional dust days are in the winter. Snow cover comes late here, in wintertime we are climactically a cold desert. And dust lingers in cold, still air. Even on warm days, there is no plan in place for frequency of road treatment at the site, just a blithe assurance of 75% reduction in dust. How is this to be achieved? Knik construction can attest to the difficulty of winter dust control here, yet no contact from Nova Gold has occurred seeking expertise. They just want us to believe that it will all be okay.

Other significant dust issues exist. The permit application argues that dust will be controlled in the blasting pit via seepage from the walls. With this a year-round effort, just how much seepage do they expect when the ambient temp is -20? The rock-crushers will be covered (though no mention is made of the disposal of dust from the 'house-sized bags' or the bags themselves) but what of the conveyors between the crushers? In the winter the winds blow from the north from this site directly at the high school, but wind containment is not addressed.

The emissions data is questionable as well. The emission estimates are based on manufacturers data, but the equipment has not been directly tested and will be purchased used, making the data for new equipment hardly sufficient. But, of course, this is a moot point as there will be NO monitoring of emissions to ensure that they stay below the limits set. Why even set limits if no entity will monitor or enforce them?

I do not believe the proposal meets basic public health concerns. It is vague, with a 'trust us' fell throughout, rather than the science one would expect in something this important. Please stay issuing any permits until these weaknesses are remedied.

Thank you for your attention.
John McLane

Dear Patrick,

As a resident of Nome for 27 years, having raised three children here, with one grandchild here in Nome also, I have serious concerns and reservations about the Rock Creek mine and the method of mining proposed.

I have had a subsistence camp up the Snake River Valley for many years. This area is highly utilized by the public for hunting and gathering. We do not need poisons in the air, contaminating our foods in the area downwind/downstream/leaching bad chemicals into the food chain.

**Please do not give NovaGold an Air permit
until an EIS is done on this mining operation.**

Have you read Dan O'Neils book "The Firecracker Boys"? Our situation here in Nome is very similiar. The book is a good read, and it may help you put our situation with NovaGold into context.

Those of us who oppose the Rock Creek Mine are not just a few whacko's, but many varied residents from educated backgrounds, worried about the health of our families and neighbors.

Please help us.

Sincerely,

Kaci Fullwood

Dear Mr. Dunn,

Please slow down and consider that people have to live here.

Your agency has done little to consider the impact of this mine on the people of Nome so far, but should you pass this Air Quality Permit #AQO978MSS01 without listening to what I assume to be a considerable number of public comments, I would like you to move your offices to anyplace along the Nome by-pass road and commence wearing dust masks for the duration of the Big Hurrah and Rock Creek mines.

The mine operation **runs through the town**; the permit addresses only air quality at the mill site. Also, I understand the permit does not require reduction of dust levels below freezing. Below freezing, when the air is dry and cold, is when dust levels are at their worst. And I cannot imagine what the town will be like, below freezing--that is 8-9 months of the year--when the wind is blowing, which is most of the time.

Please Mr. Dunn. Have mercy on the people who live here. Slow down and do your job for the public. Big industry doesn't need any help. We do.

Most sincerely,
Kathryn C. Mallory

Patrick Dunn

DEC, Air Permits

555 Cordova Street, 3rd Floor

Anchorage, AK 99501-2617

FAX: (907) 269-7508

Email: Patrick_Dunn@dec.state.ak.us

Dear Mr. Dunn,

We have reviewed the Air Quality Control Permit and Technical Report for Nova Gold's Rock Creek Mine, and would like to request some changes to better protect the citizens of Nome from negative impacts not adequately addressed in the current proposal.

Most importantly, we believe the permit inadequately covers the issue of dust control for the entire project. As we understand it, Nova Gold is planning on running three trucks per hour, 24 hours a day, 365 days of the year on public roads between the Big Hurrah site and Rock Creek. Nome residents use these roads to access camps and the outdoors, to walk, run and bike along, and for general day to day travel within the city. Many local people's camps along these roads are sites for processing and drying fish, and a heavier dust load than is already present will significantly interfere with this important subsistence activity. Recently we passed several large trucks on the Nome bypass road, and had to nearly come to a stop due to poor visibility from the dust being kicked up. Along the Teller and Council roads, cars will be traveling at much higher speeds, and this high level of airborne dust will likely prove to be a major safety concern for local drivers. Nova Gold needs to be held responsible for the significantly increased fugitive dust along this public corridor, and requirements for this must be specified in the permit. How, when, what and where will they be handling the road system dust, and how, what, when and where will the DEC be offering assurance that these requirements are complied with? The permit needs to give the DEC authority to require and regulate a more detailed fugitive dust control plan.

The current proposal of being able to control dust with water and calcium chloride is overly optimistic, and it doesn't outline this being required for anywhere other than at the mill site. Additionally, once temperatures drop below freezing, these measures won't be applicable.

In addition to dust control, the permit also seems lacking in how it addresses the bag housing system at the mill site. How often will these bags be cleaned? What will be done with material contained in the bags? Will replacement bags be kept on site, and what is the procedure for regular mill operations while these are being changed? There also are questions about the lack of bag housing on the conveyor transport points (16-18, 31-35, 42...). It seems that the permit needs to require that every point have a control device in place, for the safety of the workers, as well as the general public.

Last, we would like to question the prudence of giving out a permit to Nova Gold before they actually have their equipment purchased and in place at the mine site. The technical report details a modeling of the dust plume and equipment emissions, and we would like to make sure this actually takes place, and is not just a hypothetical model. The winds in the Snake river Valley are significant and are likely to be difficult to replicate without an actual test. Furthermore, much of the equipment Nova gold is purchasing is used, making an actual test before operation that much more important.

We are long term residents in the Nome community, and trust that your agency is going to make sure the likely negative impacts of this project on our community's air quality are adequately addressed in the Permit before it is issued.

Thank you for your time and concern in regard to these issues.

Sincerely,

Dana and Kirk Scofield

November 20, 2006

Mr. Patrick Dunn
DEC, Air Permits
555 Cordova Street, 3rd Floor
Anchorage, AK 99501-2617
FAX: (907) 269-7508
Patrick.Dunn@dec.state.ak.us

Dear Mr. Dunn,

I am writing in regards to the application for an air quality control minor permit submitted by the Alaska Gold Company, no. AQ0978MSS01.

I do not feel that there has been a clear plan presented to our community in terms of the air quality and dust control.

Please do not issue the air quality permit until several dust control issues have been addressed, including the road from Big Hurrah to the site north of town, dust from blasting in the pit, dust from the actual crushing in the mill and potential mishaps with the bag houses. The road issue is huge, considering that there is nothing in the permit that includes outside the mill site, and there are 30 + miles of dirt road to travel, along side camps and then through town.

Nome is a dynamic and windy place. I don't think Alaska Gold has a realistic idea of their goals here, nor does it appear that the state is concerned with some of these IMPORTANT issues. Please look into some of the specifics set forth by the citizens of Nome before granting this permit.

Thank you for your time,

Kristine McRae

Mr. Patrick Dunn
DEC, Air Permits
555 Cordova Street, 3rd Floor
Anchorage, AK 99501-2617

Dear Mr. Dunn:

I am writing in regards to the application for an air quality control minor permit submitted by the Alaska Gold Company, no. AQ0978MSS01.

I feel that permit application does not adequately address several concerns. Foremost among these is road dust along the traffic corridor from Big Hurrah to Rock Creek. It is my understanding that Alaska Gold Company will be trucking ore from Big Hurrah to the mill at Rock creek on a daily basis. Everyone here in Nome knows how dusty our roads are. Big heavy trucks rumbling down the road continuously throughout the day, all year long including the very dusty summer and fall, will turn our local roads into a dusty, hellish, nightmare. It's ridiculous that the permit application does not address this concern, as it has the potential to be the biggest air quality problem of the entire operation. The permit should be denied on this basis alone.

There are other concerns as well. There is no monitoring of emissions. What good is setting limits on emissions if they aren't monitored? How come wind, carrying dust from the "containment area" around the mill site wasn't factored in? Nome is one of the windiest places I've ever lived. There's no question wind will play a factor.

Alaska Gold should address these concerns before being granted an air quality control permit.

Thank you,

Lynn DeFilippo

Mr. Patrick Dunn
Department of Environmental Conservation
Air Permits
555 Cordova St. Third Floor
Anchorage, AK 99501-2617

November 18, 2006

Dear Mr. Dunn:

I have serious concerns about the Air Quality Permit for the Rock Creek Mine.

There have been no public meeting or forum about this permit. From what I can determine there is no plan in place for dust control on the road between the Big Hurrah mine site and the Rock Creek site.

Why does the permit not cover the entire project? Monitoring and enforcement seems to be missing.

What is the plan for dust control in the wintertime? Where is the agency control? What caps are involved?

What happens to the vacuum bags when they are full? How are they changed?

What consideration is given to the very strong winds in this valley?

Why is there no provision for monitoring emissions and what about emissions for the "used" equipment that is on its way to Rock Creek?

I live in this town and have respiratory issues. This proposed mining operation gives me great concern.

Sincerely,

Nancy L. McGuire

Patrick Dunn

555 Cordova Street

3rd Floor Air Permits

Anchorage, AK 99501-2617

Dear Mr. Dunn,

I have been a resident of Nome Alaska for going on 5 years. I moved here for the beauty of the area, fishing, and outdoor adventure that the region has to offer. With the new mine moving into town, a bit of this quality of life has been lost. Now, taking a nice weekend drive down the coast of the Bering Sea, or inland to the Snake River Valley, takes on a whole new meaning. No longer are we able to just go out and find peace and serenity, we now have to follow large dump trucks and semi trucks with trailers whose loads are not secured. The dust that these trucks kick up affects our air quality around Nome. I know that they are looking at methods to use in order to keep the dust level down, but aren't there better solutions than magnesium or calcium chloride? It seems as though there may be better ways of keeping the dust down due to the truck traffic, than substances that can react exothermically with water and cause irritation or burns.

Not only are these large trucks kicking up dust, they are driving on the road behind the Nome Elementary School. They are not always abiding by the speed limit. In the winter time, we have dog team races and ski races that start behind the elementary school. I can only imagine when ski season begins taking 25 third and fourth grade students out for a ski, and having 3-4 trucks speed past them in the hour they are out there. Imagine the dust, exhaust, and other substances that they will be breathing it while trying to be healthy and exercise.

Thank you for your time and allowing comments on this issue. As a teacher in Nome, I would like to continue working hard for the community. I do see it as a place I could reside in for a long time, and I would like the quality of life here to improve over time, not denigrate.

Sincerely,

Nicole H. Polk

November 20, 2006

Mr. Patrick Dunn
State of Alaska
Department of Environmental Conservation
Air Permits
555 Cordova Street
Third Floor
Anchorage, Alaska 99501-2617

Fax: 907-269-7508

Email: Patrick_Dunn@dec.state.ak.us

Regards: Permit Application AQ978MSS01 (Nova Gold/Alaska Gold Rock Creek/Big Hurrah Project)

Dear Mr. Dunn,

The proposed Air Quality permit application as written does not begin to address the full scope and impact of the proposed Rock Creek/Big Hurrah project. To reduce the scale of the permit to just the mill site at Rock Creek would lead one to suppose there should be no other activity take place relative to this proposed mine off of this property. We all know that is not the intention of the developer. The mine proposal includes Big Hurrah, 45 miles to the east, and the transportation corridor connecting the two sites. To entertain a permit process that includes anything less is entirely inadequate and short sighted.

ROAD DUST

Although the DEC may wish to state that the dust issue from Big Hurrah to the mine site is irrelevant, relative to our solicited comments, they can not be separated from any permits involving this project. The impacts of the mill site and the transportation corridor go hand in hand. One will not occur without the other.

The fact that the road dust issue has a cutoff temperature of 32 degrees is ludicrous and further illustrates the lack of understanding of the local environment by either the applicant, the DEC or both. When temperatures are below freezing or even sub zero the dust situation is at its worst. The recently constructed road to the mine site is an elevated surface in a wind blown area and likely to produce significant dust year around with the worst conditions during the sub freezing months, October through May.

PIT DUST

The assumption that pit dust will be minimal due to wall moisture seepage is highly speculative. Previous open pit placer mining in the area by Alaska Gold produced

significant fugitive dust during blasting operations when temperatures were sub freezing and increased significantly when temperatures were sub zero. The dust from equipment working in the pit will also significantly increase during sub zero conditions.

WIND

Wind is potentially the single biggest omission in this permit application. To anyone who hasn't spent any significant amount of time on the coast of Western Alaska it is almost indescribable the effect of the continuous wind we all eventually accept as a member of the family. It's true that some Nomeites actually tip over when traveling outside the region while leaning into the wind that isn't there. As a commercial pilot in the area for the past 32 years I have seen the incredible effects of this wind. A single exposed patch of bare ground can leave a triangle shaped pattern of dust extending several miles from the source. Rest assured that every truck, every blast of explosives, any holes in the bag house, any exposed conveyor will leave a tell tale sign of dust on the winter snow miles from the site. As the tailings dry they too will provide a continuous source of fugitive dust miles from the site. This situation exists at only one other mine in Alaska (I've been to all of them) Red Dog and we all know what a problem dust has been there. This does not exist at Fort Knox, Illinois Creek, Greens Creek, Pogo or anywhere else. One only has to fly over the Nome River valley in the spring and you will see the entire valley is brown on the melting snow from the single road up the valley.

There can be no serious consideration of a permit and no permit issued without the full consideration of the impact of the entire project.

The permitting process to date for this project has been generally rushed, inadequate and lacking the depth needed to protect the environment, the wildlife and the citizens of this region. Rest assured as ignorant and naïve as we were to the process early on we expect a full and comprehensive process to be the standard followed now and no less.

Sincerely and with Best Regards

Jim Rowe

November 20, 2006

Austin & Joni Ahmasuk

Patrick Dunn
STATE OF ALASKA
DEPARTMENT OF ENVIRONMENTAL CONSERVATION
555 Cordova Street 3rd floor, Air Permits
Anchorage, AK 99501-2617

RE: Alaska Gold Air Permit Rock Creek Mine

Austin Ahmasuk is an Inupiaq Eskimo and a lifelong (born and raised) Nome resident and has commented at every opportunity regarding this mine and wish to reference all of my previous comments to DEC and DNR. Joni Ahmasuk is also an Inupiaq Eskimo and was born in Nome and has lived in Nome most of her life and now lives here with Austin as his wife. We are both longtime subsistence users and we actively seek efforts for its advocacy by conducting water quality testing, becoming informed about projects such as this, advocating for subsistence at the State, National, & International level, and actively use the resources of the land.

The air permit does not address the effect of wind carrying dust and emissions out of the identified containment area at the mill site. Prevailing winter winds are from the north headed toward the high school and Nome.

Emissions Monitoring

There are limits on emissions but no monitoring of emissions is required or outlined. The lack of monitoring is very puzzling and completely frustrates the public process. **The permit should not be issued until a plan is in place that includes caps on emission levels, a monitoring plan, and some form of agency control and enforcement!**

Emission Estimates

The exact make and model of equipment for emissions tests isn't known, making the data suspect. Additionally, Alaska Gold mentioned during their presentation at the recent Alaska Miners Association that they intended to purchase used equipment to keep costs down. The emissions for used equipment may not match those of the manufacturer's specs, so they are not using the actual emission levels in their calculations.

Road Dust

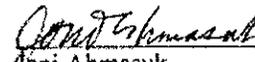
This project will create a significant amount of road dust as heavy wheeled traffic will be used between Nome and Big Hurrah. Between Nome and Big Hurrah there are a significant number of subsistence camps that use the land for drying and curing subsistence foods. It is widely believed that dust from roads can destroy the food value of subsistence caught foods. It is very puzzling that DEC and Alaska Gold would not

even include dust from haul roads within the calculation. We believe that dust from Alaska Gold haul trucks will have the greatest impact upon subsistence. At the June 2006 public meeting road dust was a point that was made very clear by Rose Fosdick whose family has camps in the area. The most effective and non-toxic dust control agent(s) should be used for controlling dust and should be applied regularly enough to control dust. Additionally road dust is more difficult to control in the winter time and is even worse during the fall and winter when the air is very dry. Road dust control methods should be used that are non-toxic and also are effective during freezing temperatures. A paved road surface would be the ideal road surface. Road dust simply can not be underestimated and Alaska Gold should be required to apply road dust control methods that will be effective and do not ruin subsistence foods. We suggest that Alaska Gold apply **soybean oil soapstock** as a road dust control method and NOT Calcium Chloride in an appropriate amount suggested by its manufacturer or AKDOTPF. We firmly believe that some non-toxic alternative must be placed that will not infiltrate into groundwater and will not wash away when wet otherwise it will require continual application when the road surface becomes degraded by Alaska Gold. Soybean oil soapstock requires some considerations for application directly related to air quality. The road surface must be prepared and graded to proper specifications. If it is to be graded again because heavy wheeled traffic will destroy the road surface it must be re-applied. Grader operators must be properly trained in proper road grade profiles so as not to cause washboards or potholes. Grader blades should be straight and true to properly pull in the shoulder and drift surface material to the proper grade profile. All of those parameters are directly related to road dust and must be detailed in the permit to protect subsistence. We also believe that road dust is related to vehicle speed. We strongly suggest that DEC require a speed limit below 55 miles per hour for all Alaska Gold vehicles. 45 miles per hour is a reasonable vehicle speed on Nome's dirt roads that I believe will reduce road dust.

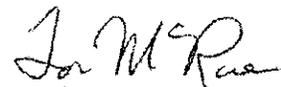
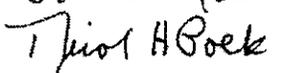
Road dust from this project will have the potential to greatly affect the environment. Fine particulate matter from this project will affect the human environment but also the natural environment whereby tons of potentially toxic material may be deposited on the land and into surface and or ground water. We wish to reference the *Environmental Health Perspectives (EHP)* journal of peer-reviewed research and news on the impact of the environment on human health and its article titled "*Down With Road Dust*" and suggest that DEC require conditions within the Alaska Gold air permit consistent with EHP's recommendations

Thank you for your time and consideration.

 11-20-2006
Austin Ahmasuk

 11/20/06
Joni Ahmasuk

Attachment *Down With Road Dust*

 11/20/06
 11/20/06

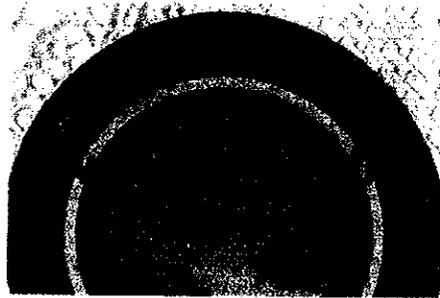
Ian McRae, Nome, AK

Nicole Polk, Nome, AK

Environmental Health Perspectives Volume 111, Number 16, December 2003

Innovations

Top image credits: Background, tire: Photodisc; truck inset: Julie Reinltz/Iowa Waste Reduction Center



Down with Road Dust

There are more than 3.9 million miles of roadway in the United States, according to the Federal Highway Administration, and, depending on the area of the country you're in, as much as 70% of that road mileage is unpaved. The 1997 U.S. Environmental Protection Agency (EPA) *National Air Quality and Emissions Trends Report* states that those unpaved roads—which can cover a wide range of compositions, from compacted dirt to shale/slate to gravel—are responsible for more than 10 million tons of particulate matter emissions each year. Economic, logistical, and even aesthetic realities indicate the impossibility of paving every mile of unpaved roadway in America. The goal, then, is to minimize the generation and spread of dust particles.

To help control dust, road builders can either mix something into the roadway as it's built or they can apply something after the fact, but many traditional dust suppressants have serious flaws. One new approach is Dust Stop, a proprietary formulation of natural starches produced by the Canadian firm Cypher International that may prove both healthier and more effective than traditional suppressants.

The Trouble with Dust

A 1993 U.S. Department of Transportation study by civil engineering professor Thomas Sanders and then-graduate student Jonathan Addo of the Colorado State University cites a 1983 Forest Service estimate that for every vehicle traveling one mile of unpaved roadway once a day, every day for a year, one ton of dust is deposited along a corridor extending 500 feet out on either side of the median. In the 1 December 1998 issue of *Environmental Science & Technology*, Ann Miguel and Glen Cass, environmental engineering professors at the California Institute of Technology, identified at least 20 different human allergens, including molds and pollen, in dust stirred up from paved roads. Miguel says results would be similar, if not worse, on unpaved roads, especially if it's a frequently traveled unpaved road in an agricultural area, where pollens and other plant matter would be prevalent on roadways. Other substances found in lesser amounts include rubber breakdown particles from tires and asbestos particles from brakes.

"Particles of the roadway itself will be continually ground smaller, until they approach the ten- to fifteen-micron danger size where they can more easily penetrate deep into the lungs," says Miguel. This is also the ideal size range for particles to stay airborne for longer periods of time—larger than this, they tend to settle more quickly and are less of an immediate hazard, although they are still subject to the same grinding/regrinding phenomenon.

Particles larger than 2.5 microns can lodge in the upper respiratory area, where they may cause severe irritation. Effects may be especially pronounced in infants, the elderly, and those with preexisting conditions such as asthma. Particles this size may also be linked to some respiratory cancers.

Particles smaller than 2.5 microns go deeper into the lungs, where they can damage epithelial cells and even pass into the bloodstream. "Small dust particles, some of which may derive from . . . dust as well as combustion sources, have even been found in the heart material of some subject animals," says John Watson, a research professor in the division of atmospheric sciences at Nevada's Desert Research Institute. Dust particles this small can evade all but the most specialized of filters. So those who live near unpaved roads aren't the only people at risk from these particles—vehicle passengers also are exposed, even if they ride with their windows rolled up.

Some studies indicate that human health isn't the only thing that suffers in the dispersion of road dust. Watson points out that near unsurfaced roads, plants are typically dusty, and anecdotal evidence suggests that crop yields can be reduced. According to a 1996 technical report by the U.S. Army titled *Dust Control Material Performance on Unsurfaced Roadways and Tank Trails*, dust on leaf surfaces increases leaf temperatures and water loss, and decreases carbon dioxide uptake. This may make vegetation susceptible to chronic decreases in photosynthesis and growth, eventually leading to accelerated erosion in areas such as roadsides from lack of adequate stabilizing vegetation.

And the dust impacts not only the air, but the water as well, as it settles into nearby streams and rivers. In February 2000, researchers led by biology professor Dennis Murphy of the University of Nevada, Reno, released an assessment of California's Lake Tahoe citing a 30-year decline in clarity from 102 feet to 68 feet. Much of the problem was attributed to increased algal growth triggered by atmospheric deposition of phosphorus compounds associated in part with road dust.



It's a dusty job, but somebody has to do it. University of Northern Iowa researchers sample the effectiveness of dust suppressants in keeping road runoff from entering nearby water sources. Image credits: Julie Reinitz/Iowa Waste Reduction Center

Further, as Sanders and Addo point out, "the generation of dust means the loss of [fine aggregate material], which act as road surface binders. This represents a significant material and economic loss." According to their report, Iowa's 99 county secondary road departments spent more than \$32 million for aggregate replacement in 1978 alone. Tim Trumbull, an environmental specialist with the Iowa Waste Reduction Center at the University of Northern Iowa, further points out that dust can cause low visibility on unpaved roads, abrades mechanical equipment, and damages electronic components such as computers.

Traditional Dust Suppressants: A Mixed Blessing

Traditional dust suppressants generally fall into one of six generic categories: surfactants, which are short-term wetting agents requiring frequent application; adhesives such as lignin sulfonate (tree sap), which act as binders to form a seal over the surface; electrochemical stabilizers derived from sulfonated petroleum, which expel water from the soil and increase compaction; petroleum products, which bind fine particles together; chloride salts, which both attract moisture from the atmosphere and retard its evaporation; and miscellaneous other products including microbiological binders and polymers.

But some of these products pose environmental hazards that are worse than the dust itself, and the effects of others are unknown. Thomas Plechota, an assistant professor of civil and environmental engineering at the University of Nevada, Las Vegas, is part of a task force looking at road dust suppressants and their use and regulation. Plechota and colleagues recently completed a water quality impact study in Clark County, Nevada. The researchers tested 11 different substances (representing the major suppressant categories) by applying them to unpaved roads, then simulating sufficient rainfall to create runoff. Then they analyzed the runoff for organics, inorganics, metals, and other substances.

"The summary of that study indicates that no matter what suppressant was used, you would see some sort of water quality impact," says Piechota. "Some compounds, like the petroleum compounds, contributed more metals, volatile organic compounds, and the like, while others, like magnesium chloride, had a less noticeable environmental impact." Another point that he says doesn't get raised often is the fact that any suppressant is going to create a more or less impervious surface. "So when you do get rainfall," he says, "you'll get increased runoff, which has a hydrologic impact of its own."

Human health effects also are a concern. According to the 2000 handbook *Unsealed Roads Manual: Guidelines to Good Practice*, published by Australia's ARRB Transport Research, "petroleum-based products present the greatest environmental risk with potential hydrocarbon contamination of vegetation, water courses, or groundwater if applied excessively or washed from the roadway before curing."

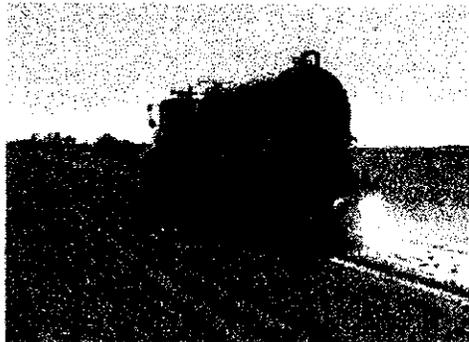
Aside from the environmental and human health effects, many traditional dust suppressants simply aren't that effective. Trumbull conducted a year-long test in 2000 in which he looked at the effectiveness of a number of dust suppressants. He applied six different suppressants along an unpaved roadway--magnesium chloride, calcium chloride, lignin sulfonate, asphalt millings, new soybean oil, and used fryer oil (which, unlike the other five, is not as commonly used as a dust suppressant).

Trumbull's tests indicated that the lignin sulfonate was effective, yet tended to adhere to passing vehicles and was difficult to remove from painted surfaces. The chlorides worked less well and tended to break down more quickly, while the oils also worked well but lost their effectiveness quickly when the road surface was bladed during maintenance.

"One of the things that strikes me about dust suppressants as a whole," says Watson, "is the lack of detailed studies on their effectiveness and their impact on both the environment and human health. We haven't really looked at how they impact soil and water, and the mechanisms by which they move through soil into subsurface and nearby water supplies." Watson also points out that many suppressants are proprietary materials, so there's not a lot of publicly available information about them. "Most of the statements I've seen don't constitute rigorous proof. There is very little rigorous verification of effectiveness, lack of toxicity, et cetera," he says. "The general position seems to be 'Well, it's not on anyone's toxics list, so it must be okay.'"

The Starch Solution

According to Cypher spokesperson Todd Burns, the need for a new type of dust suppressant was obvious from the logistical and environmental problems rife among traditional suppressants. Then, he says, Cypher discovered starch derivatives as a tackifier for hydroseeding applications--mixing mulch, seed, fertilizer, and water into a slurry that is sprayed on the ground. "The basic ideas are the same: spraying a substance over the top of a surface and having it stay there for a designated period of time," says Burns. "So we figured if the starch could bond to the soil surface, it should be able to do so on a road surface as well."



Stopping dust safely. A sprayer is used to apply the starch-based Dust Stop suppressant to a rural roadway.
Image credit: Cypher International

Burns says Dust Stop can be used on gravel, limestone, dirt, sand, or any other unpaved roadbed. According to Burns, the liquified starch forms a chemical bond with the particles on the surface of the road, and the larger the particle size, the more efficiently the product will function. "Smaller particles will allow Dust Stop to leach a little farther from the surface," he says, "while material with larger particle sizes will help contain Dust Stop closer to the surface and help it form a thicker

Down with Road Dust

Page 4 of 4

layer of binding protection on the top."

Dust Stop promotional materials say the product has been designed for high-, moderate-, and low-temperature applications, and that it is available in a citronella scent, which the company claims repels rodents, small animals, and insects, significantly lowering roadkill incidents and deterring disease-carrying insects around treated roads.

Dust Stop is made entirely with natural starches that are completely biodegradable. While the exact composition of Dust Stop (as well as its cost information) is proprietary, the company's material safety data sheet identifies it as a "modified polysaccharide," a "somewhat alkaline" substance (pH 10.8-11.5) that is a mild skin and respiratory irritant. The firm PSC Analytical Services performed the rainbow trout 96-hour pass/fail toxicity test (a test that measures the effect of exposure to a test sample on the survival of young rainbow trout over a 96-hour period) on Dust Stop, and test results showed 0% mortality after 96 hours.

Dust Stop has been tested on unpaved roadways in China, Canada, and other countries, and is currently being tested on a heavily traveled dirt road outside of Prescott, Arizona. While only time will tell if Dust Stop is indeed a viable alternative to traditional dust suppressants, preliminary results suggest that the starch solution may bring about a healthy resolution to the problem of dusty unpaved roads.

Lance Frazer

Suggested Reading

Dust Stop: Multiple-Use Environmentally Friendly Dust Suppressant (company website). Winnipeg, Manitoba: Cypher International. Available: <http://www.cypherintl.com/duststop.php> [accessed 17 November 2003].

Gebhart DL, Hale TA, Michaels-Busch K. 1996. Dust Control Material Performance on Unsurfaced Roadways and Tank Trails. USAEC/USACERL Technical Report SFIM-AEC-ET-CR-96196. Aberdeen Proving Ground, MD: U.S. Army Environmental Center. Available: <http://aec.army.mil/usaec/technology/dustcontrol.pdf> [accessed 17 November 2003].

Sanders TG, Addo JQ. 1993. Effectiveness and Environmental Impact of Road Dust Suppressants. MPC-94-28. Fargo, ND: Mountain Plains Consortium [for the U.S. Department of Transportation]. Available: http://www.ndsu.nodak.edu/ndsu/ugpti/MPC_Pubs/html/MPC94-28.htm [accessed 17 November 2003].

Watson JG, Chow JC, Pace TG. Fugitive dust emissions. In: Air Pollution Engineering Manual, Second Edition (Davis WT, ed). New York, NY: John Wiley & Sons, 2000:117-135.

Last Updated: November 21, 2003