

Health Consultation

FLAME METALS PROCESSING, INC.

CITY OF ST. LOUIS PARK, HENNEPIN COUNTY, MINNESOTA

EPA FACILITY ID: MND087258315

MARCH 28, 2005

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Public Health Service
Agency for Toxic Substances and Disease Registry
Division of Health Assessment and Consultation
Atlanta, Georgia 30333

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HEALTH CONSULTATION

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Prepared by:
Minnesota Department of Health
Under Cooperative Agreement with the
U.S. Department of Health and Human Services
Agency for Toxic Substances and Disease Registry

Public Comment Health Consultation

**Flame Metals Processing, Inc.
City of St. Louis Park, Hennepin County, Minnesota**

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March 16, 2005

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The Minnesota Department of Health
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U.S. Department of Health and Human Services

FOREWORD

This document summarizes public health concerns related to an industrial facility in Minnesota. It is based on a formal site evaluation prepared by the Minnesota Department of Health (MDH). For a formal site evaluation, a number of steps are necessary:

- ! *Evaluating exposure:* MDH scientists begin by reviewing available information about environmental conditions at the site. The first task is to find out the quantity of air pollutants emitted from a facility, where they go from the site, and how people might be exposed to them. Usually, MDH does not collect its own environmental sampling data. Rather, MDH relies on information provided by the Minnesota Pollution Control Agency (MPCA), the US Environmental Protection Agency (EPA), and other government agencies, private businesses, and the general public.
- ! *Evaluating health effects:* If there is evidence that people are being exposed—or could be exposed—to hazardous substances, MDH scientists will take steps to determine whether that exposure could be harmful to human health. MDH’s report focuses on public health— that is, the health impact on the community as a whole. The report is based on existing scientific information.
- ! *Developing recommendations:* In the evaluation report, MDH outlines its conclusions regarding any potential health threat posed by a site and offers recommendations for reducing or eliminating human exposure to pollutants. The role of MDH is primarily advisory. For that reason, the evaluation report will typically recommend actions to be taken by other agencies—including EPA and MPCA. If, however, an immediate health threat exists, MDH will issue a public health advisory to warn people of the danger and will work to resolve the problem.
- ! *Soliciting community input:* The evaluation process is interactive. MDH starts by soliciting and evaluating information from various government agencies, the individuals or organizations responsible for the site, and community members living near the site. Any conclusions about the site are shared with the individuals, groups, and organizations that provided the information. Once an evaluation report has been prepared, MDH seeks feedback from the public. *If you have questions or comments about this report, we encourage you to contact us.*

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 (toll free call - press "4" on your touch tone phone)

On the web: <http://www.health.state.mn.us/divs/eh/hazardous/index.htmls>

Summary

Flame Metals operates a large metal heat treating operation in St. Louis Park, Minnesota. The facility is located adjacent to a residential neighborhood. Some neighborhood residents have expressed concern that emissions from the facility have made them feel ill. A partial review of available information on emissions from similar operations in other states suggest that there is the potential for significant emissions from the use of large amounts of natural gas and from the use of an oil-based quenching system. Because of a lack of data from site-specific stack or emission tests, MDH is unable to evaluate the potential public health effects from exposure to the emissions at this time. The site currently represents an indeterminate public health hazard.

I. Site Background and History

Flame Metals Processing, Inc. (Flame Metals) is a commercial metal heat treating facility located at 7317 West Lake Street in the City of St. Louis Park, Minnesota. The facility is in the southwest quadrant of the intersection of Minnesota Highway 7 and Louisiana Avenue South (see Figure 1). The facility is located in a mixed commercial/industrial and residential area, with businesses located on the north, east, and south sides, and single-family homes immediately to the west (the South Oak Hill neighborhood). The facility is located at the base of a hill that rises to the south-southeast, creating a small valley along that side of the facility. Some residences are located on the top of the hill next to the facility, making them level with the roofline of the facility. A bike trail is also located along the east side of the facility, and active railroad tracks are located immediately to the south.

At the facility – reportedly one of the largest of its type in the Midwest – fabricated metal parts from outside suppliers are heat treated as needed for their customer-s use. The general process requires heating the metal parts to between 1600 to 1700 degrees Fahrenheit in large furnaces, quenching (cooling) them in oil, washing, and tempering. Tempering involves heating the metal parts at lower temperatures to produce a specified hardness level. Flame Metals has operated under its current owner since 1985 and was a metal heat treating facility for an unknown period before 1985.

In the spring of 1996, residents called City of St. Louis Park staff with concerns that emissions from Flame Metals could be responsible for approximately six cases of cancer (primarily rectal and stomach cancer) in the neighborhood near the facility. The City of St. Louis Park contacted MDH for assistance. MDH responded by investigating whether potential carcinogenic materials were being used by Flame Metals and whether these materials could represent a health hazard to the surrounding community. This investigation was summarized in a Health Consultation (MDH 1997) that focused on the use of tetrachloroethene (PCE) as a degreasing solvent at the facility. The Health Consultation concluded that PCE emissions from the facility (which ceased in 2000 when the use of PCE was discontinued) were unlikely to represent a human health risk. However, the Health Consultation indicated that smoke emissions from the facility were a continuing issue that might need further investigation by MDH.

As a result of an enforcement action by the Minnesota Pollution Control Agency (MPCA)

against the facility over the use of the solvent degreaser, the company installed an air-cleaning device known as a “Smog-Hog” in 2001. This device has not resulted in a substantial improvement in smoke emissions from the facility, primarily due to the high temperature of the emissions and the low temperatures required for proper operation of the “Smog-Hog” and the numerous exhaust points in the facility. Occasionally smoke and other emissions still drift towards the residential area to the west of the facility. Figure 2, a photograph of the site taken by MDH staff in November 2004, shows the smoke that is sometimes emitted from vents on the facility’s roof.

Over the last few years, residents have complained about the emission of smoke, fumes, and particulate matter from the facility, and have expressed concern regarding the potential and perceived health effects from exposure to the continuing air emissions from the Flame Metals facility. Numerous complaints have been made to state and local authorities. The City of St. Louis Park and local residents have requested that MDH staff evaluate these emissions and their potential health effects.

In the preparation of this report, MDH consulted with local residents, as well as staff from the MPCA, Minnesota Occupational Health and Safety Administration (MN OSHA), the City of St. Louis Park and Flame Metals. MDH staff also participated in a community meeting, and conducted a site visit to the facility.

Community Meeting

On Tuesday, November 9, 2004, MDH staff participated in a community meeting about the Flame Metals facility organized by the City of St. Louis Park. Attending the meeting were community members, city staff, MPCA staff, Flame Metals personnel, and local and state elected officials or their designates.

After introductions were made, the MPCA provided a brief history of their involvement with the facility, including the past air emissions permit, and the enforcement action they initiated because of the solvent degreaser. The MPCA indicated that the facility no longer has an air emissions permit, because when the degreaser was removed, the remaining emissions were below regulatory thresholds. MPCA staff further explained that they have no regulatory authority over odors, and their authority to regulate smoke emissions is based on the percent opacity of the smoke and its duration (>20% opacity averaged over six minutes), which are not typical conditions at the facility. MPCA staff asked the community to continue to notify them of perceived problems with the emissions from the facility.

Representatives from Flame Metals next described their operation, including the process of heat treating metals, products and equipment used, and steps they have taken to reduce their emissions. These steps include removing the degreaser, improving ventilation, and even turning down some work that would be likely to increase smoke emissions. Nonetheless, they recognized that there was a potential for emissions from their facility to reach neighboring homes under certain conditions. They indicated a willingness to try to work with all parties to mitigate the situation as best as possible.

Several citizens explained their concerns about emissions from the Flame Metals facility. They described various health-related complaints that they feel are attributable to exposure to emissions from the facility, which include:

- Headaches
 - Dizziness
 - Nausea
 - Chest pain / chest 'heat'
 - Irritated eyes, nose, throat and chest
-
- Various quality of life issues such as worrying, a perceived loss of free use of their property when emissions are bad, and feelings of helplessness.

The citizens indicated that their goal was not to shut down the facility, but rather to work with them to resolve the problem and ensure that their health is being protected. Many indicated that the problems they feel are associated with the facility emissions are not caused by smoke, which tends to be a short-term phenomenon, but rather the constant emission of unseen fumes.

A summary of complaints about emissions from the Flame Metals facility made from 2003 – 2005 to the Minnesota state duty officer, the designated clearinghouse for reporting environmental releases and complaints, is attached as Appendix 1. The complaints include the date and time, and describe the type of emissions and any relevant health symptoms experienced. The wind speed and direction at the nearby Minneapolis-St. Paul International Airport (accessed at <http://www.wunderground.com>) at the approximate time of the complaint is also included in Appendix 1.

The community meeting ended with the City of St. Louis Park staff summarizing the information presented at the meeting, and proposing some next steps which include trying to identify what is in the emissions, looking at possible controls, and communicating further with the community.

Site Visit

On Monday, December 6, 2004, MDH staff visited the Flame Metals facility with representatives of the City of St. Louis Park. Initially we met in the office area and discussed the reason for the site visit – to view the company's operations and look at possible sources of air emissions. There was no detectable odor from the operation in the office area. We discussed the most recent complaint received by the city and state, where a resident near the plant described dizziness and blurred vision from plant emissions after being outdoors for approximately two hours. The facility staff indicated that much improvement had been made in the last few years as outdated equipment was replaced or removed, and the facility's processes modified. The same day as the site visit, the company had completed raising the vent stacks from four furnaces at the rear (south end) of the facility from approximately six feet to approximately 14 feet above the roof. This was done to see if it would have any positive effect of emissions at the south end of the facility, where homes are located at roof level just across the street.

The facility is of concrete block manufacture, with an approximate interior height of 18 feet. It consists of three separate bays, each with several heat-tempering furnaces, washers, and other equipment. Small metal parts are fed into the integral quench furnaces and heated to a specified temperature, then quenched in an oil bath (AAA Quench Oil) located beneath the furnace to cool them. Smoke is emitted when the furnaces are loaded and unloaded, as oil clings to the parts and burns when it hits the heated air. The furnaces use a special endothermic atmosphere with a low oxygen content to prevent oxidation of the metal parts, generated by passing air and natural gas over a nickel catalyst. The typical composition of the endothermic atmosphere is 40.4 % hydrogen, 39% nitrogen, 19.8 % carbon monoxide, 0.5% methane, 0.2% water vapor and 0.1% carbon dioxide (D. Stevermer, Flame Metals, personal communication 2004). Flames literally come out of the furnace door areas, as they are under pressure to prevent entry of room air. Vent hoods are located over the doors, as well as at the rear of the furnaces where the furnace exit vents are located. Waste gases from the furnaces are vented there, and a natural gas flame is used to partially burn off the emissions. Initially upon entering the plant floor, I could detect a strong petroleum-solvent like odor, which left me feeling slightly light-headed. After a minute or so, the feeling passed and the odor was not longer detectable.

The facility has a total of 18 furnaces, both integral quench and tempering. They basically vent either directly to the atmosphere through roof vents, or into the plant air. There is no central emissions collection or control system. The facility staff stated that some emissions would likely enter the plant first, before going outside through the vents. Smoke from furnace charging (loading) is reportedly intermittent and brief inside the facility.

On the roof of the facility, there are many small direct stacks or vents from the furnaces, as well as several large main vents for general facility air. The roofing material was stained a blackish color around the large main vents, perhaps from deposition of particulate matter. One smoke event was observed from the roof. Smoke was emitted from one of the large main vents (similar to what is shown in Figure 2) for approximately one minute before clearing. Some of the smaller roof vents, from the integral quench furnaces, had the same petroleum-solvent like odor that I first detected when I entered the plant. The odor was coming from the low (3') black, square vents on a constant basis.

The facility officials admit that there is the potential for emissions from the facility to impact neighboring properties when conditions are right. They are discussing building a wall along the street side of the facility to try to block or raise the emissions above the level of the homes. The city staff also stated that perhaps some sort of centralized emission control or venting system could be designed. The facility staff indicated that they have looked into that, but the current building setup made that difficult and it is not typically used in this industry.

Minnesota OSHA Investigation

In response to a complaint received from an employee of Flame Metals, in February and March of 2004 the Minnesota Department of Labor and Industry, Occupational Safety and Health Division (OSHA) conducted an industrial hygiene investigation at the facility (MDLI 2004). The purpose of the investigation was to determine compliance with workplace safety regulations, not to characterize emissions. Based on the nature of the complaint and a review of the facility

operations, area and personal air samples were collected for analysis for carbon monoxide and total particulates. It appears carbon monoxide and total particulates were selected based on the possibility of their generation from incomplete combustion of natural gas and from the burning of oil used in the integral quench furnaces.

Air samples were collected at the facility on February 27 and March 18/19, 2004. Carbon monoxide was measured using a direct reading instrument, and particulate matter was collected on filter cartridges. Carbon monoxide was detected in two of three area samples at a maximum concentration of 16 parts per million (ppm), and in three personal samples carbon monoxide was detected at concentrations of 6.6, 5.1, and 3.8 ppm based on an eight-hour time-weighted average. The OSHA standard for workplace exposure to carbon monoxide is 35 ppm for an eight-hour time-weighted average. For total particulates, two personal samples were collected. The particulate sample results were 0.12 and 0.25 milligrams per cubic meter (mg/m^3). The OSHA standard for total particulates is $15 \text{ mg}/\text{m}^3$ for an eight-hour time-weighted average. Because no apparent violations of workplace standards were observed, OSHA concluded the investigation at that point.

Outdoor Air Sample

In response to continuing complaints from residents near the Flame Metals facility, the MPCA arranged with the City of St. Louis Park to collect an ambient air sample across the street in the neighborhood southwest of the facility. The sample was collected over a one-hour period in the early morning of September 17, 2004 using a stainless steel Summa canister. The air sample was analyzed at the MPCA laboratory for 58 volatile organic compounds (VOCs). No visible smoke was observed coming from the plant while the air sample was being collected, but a 'faint metallic odor' was reported by the sampler.

The results of the air sample analysis are shown in Table 1. Only detections are listed. Also presented in Table 1 are available screening criteria or standards for some of the VOCs, as well as common background ranges for the more common VOCs as published in a recent study conducted in the Twin Cities (Sexton et al 2004). Multiple VOCs were detected, most of them at concentrations below one part per billion (ppb) by volume. Many of the VOCs are commonly found in the urban environment as a result of vehicle emissions or other sources. Of the VOCs detected in the air sample, only benzene, 1,3-butadiene and tetrachloroethene were detected at concentrations that may exceed a MDH Health Risk Value (HRV) or Interim Screening Criteria (ISC). Detections of these chemicals in ambient air are not uncommon in the Twin Cities, as the Sexton et al data suggests. Weather records for September 17, 2004 (accessed at <http://www.wunderground.com>) indicate that the wind direction in the area around the time the air sample was collected was from the south-southeast at approximately ten miles per hour, so the sample may not have been collected immediately downwind of the facility and the data may therefore not be representative of the emission from Flame Metals.

II. Discussion

The Flame Metals facility operates on a continuous basis. Given the number and variation in reported times for the complaints listed in Appendix 1, as well as the different reported causes for the complaints (smoke, fumes, odors, etc) it appears that the emissions from the facility that are the subject of complaints from neighbors may be related to the constant operation of the integral-quench oil and tempering furnaces, rather than only from the brief periods of smoke observed during loading or unloading of metals parts from the furnaces. According to the material safety data sheet (MSDS) for AAA Quench Oil (Park Metallurgical Corporation, Detroit, MI), it is known to release carbon monoxide and hydrocarbons when decomposing, such as through extreme heat or burning. The MSDS also states that overexposure via inhalation may cause “irritation, headache, nausea, and/or drowsiness.” Based on a review of MSDSs for similar oils, it is also possible that oxides of nitrogen (NO_x) and perhaps sulfur dioxide (SO₂) could also be released when the oil is heated or burned. Particulate matter could also be produced when the oil is burned. The facility also uses large amounts of natural gas to fuel its various furnaces, reportedly in the millions of BTUs per hour. The burning of large quantities of natural gas alone would also generate carbon dioxide, carbon monoxide, NO_x, SO₂, and other gases. The endothermic atmosphere used in some of the furnaces also would contribute carbon monoxide, NO_x, and other gases to the emissions.

When wind conditions are from an easterly direction, emissions from the facility roof vents and stacks may drift towards the residential neighborhood. Figures 3a and 3b are quarterly wind roses for a five-year period for the Minneapolis/St. Paul International Airport, which is located approximately eight miles to the southeast. As can be seen in Figures 3a and 3b, winds are typically from the east, southeast, or northeast approximately 25% of the time, with the highest percentage of winds from those directions occurring in spring. In the complaint logs in Appendix 1, wind directions at the time the majority of complaints have been made by residents in the adjacent Oak Hill neighborhood have been from an easterly direction at speeds over five miles per hour.

Because of the facility’s physical location, nearby residences may also experience downwash effects. Downwash effects can occur as a result of drag on emissions in the wake downwind of a stack due to the presence of the stack itself, and from building downwash when emissions are carried downward by the flow of air over and around a building (Canepa 2004). The physical setting of the facility, which is located at the base of a hill, may also contribute to downwash effects or other unusual air flow conditions.

Emission factors from the EPA’s Emissions Factors & Policy Applications Center FIRE database (Factor Information REtrieval Data System; found at <http://www.epa.gov/ttnchie1/>) were reviewed. Under the Source Classification Code (SCC) for metal heat treating quench baths (30402210), the emission factor for VOCs is listed as 280 pounds per ton of material processed. MDH staff have also spoken with officials at the Wisconsin Department of Natural Resources (WI DNR) regarding metal heat treating facilities. WI DR staff are investigating a large metal heat treating facility in Wisconsin for alleged violations of their air permit

requirements because of VOC emissions from an oil quench bath process (P. Mike Griffin, WI DNR, personal communication 2005).

In an EPA report issued in 2000, the adverse health effects that may be associated with exposure to what EPA considers criteria air pollutants was described (EPA 2000). The criteria pollutants are carbon monoxide, NO_x, SO₂, VOCs, particulate matter, and lead. Exposure to carbon monoxide leads to a reduction in the ability for oxygen to be delivered through the bloodstream. Exposure to NO_x can irritate the lungs, and is a major contributor to the formation of ground-level ozone, another irritant. VOCs are also involved in the formation of ozone. Exposure to VOCs themselves may be associated with a number of potential health effects, including headaches, nervous system effects (dizziness, confusion), and irritation of the eyes and respiratory system. Some VOCs, such as benzene, are potentially carcinogenic. Exposure to SO₂ and particulate matter may be associated with effects on breathing, increased risk of respiratory illness, and aggravation of existing respiratory and cardiovascular disease (including asthma).

Child Health Considerations

ATSDR and MDH recognize that the unique vulnerabilities of infants and children make them of special concern to communities faced with contamination of their water, soil, air, or food. Children are at greater risk than adults from certain kinds of exposures to hazardous substances. They are more likely to be exposed because they play outdoors and they often bring food into contaminated areas. They are smaller than adults, which means they breathe dust, soil, and heavy vapors close to the ground. Children also weigh less, resulting in higher doses of chemical exposure per body weight. The developing body systems of children can sustain permanent damage if toxic exposures occur during critical growth stages. Most importantly, children depend completely on adults for risk identification and management decisions, housing decisions, and access to medical care.

Children in the residential neighborhood adjacent to the Flame Metals facility may be exposed to emissions from the facility when the wind is in their direction. Children using the bike trail on the east side of the facility could also be exposed to emissions from the facility.

III. Conclusions

Flame Metals operates a major metal heat treating operation in St. Louis Park, Minnesota. The facility is located adjacent to a residential neighborhood. Some neighborhood residents have expressed concern over emissions from the facility, and some have complained to local and state authorities on multiple occasions that emissions from the facility have made them feel ill. The facility does not currently have an air emissions permit from the MPCA. A partial review of available information on emissions from similar operations suggest that there is the potential for the facility to emit carbon monoxide, NO_x, SO₂, particulate matter, and VOCs, potentially in significant quantities, from the use of large amounts of natural gas and from the use of an oil-based quenching system. An ambient air sample collected at a nearby residence and analyzed for VOCs may not have been representative of emissions from the facility, and no site-specific

stack test or emissions data are available to evaluate the emissions. MDH is therefore unable to evaluate the potential public health effects from exposure to the emissions at this time. The site currently represents an indeterminate public health hazard.

IV. Recommendations

1. To evaluate the potential public health risks from exposure to air emissions from the Flame Metals facility, stack test or other emissions data are needed for EPA criteria air pollutants including carbon monoxide, NO_x, SO₂, VOCs, and particulate matter. Individual stacks, especially those from the integral quench and tempering furnaces, or groups of stacks representing similar processes, should be monitored so that the total facility emissions can be estimated.
2. Air dispersion modeling would be helpful to estimate concentrations of pollutants in the adjacent residential neighborhood.
3. Ambient air samples should also be collected or air monitoring be conducted in the adjacent neighborhood, preferably only under conditions when emissions might reasonably be expected to drift in that direction, i.e. when winds are from the east, and should be of sufficient duration to account for the variability in wind direction and speed.
4. Interim actions that could lessen or mitigate the likelihood of emissions from the facility reaching the adjacent neighborhood, such as raising stack heights, should also be considered.

V. Public Health Action Plan

MDH's Public Health Action Plan for the site consists of continued consultation with MPCA, City of St. Louis Park, and Flame Metals staff on air sampling and analysis, communication of the results to neighborhood residents near the site, and participation in any planned public outreach activities.

VI. References

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CERTIFICATION

This Flame Metals Health Consultation was prepared by the Minnesota Department of Health under a cooperative agreement with the Agency for Toxic Substances and Disease Registry (ATSDR). It is in accordance with approved methodology and procedures existing at the time the health consultation was begun. Editorial review was completed by the Cooperative Agreement partner.

Jeff Kellam
Technical Project Officer, SPS, SSAB, DHAC
ATSDR

The Division of Health Assessment and Consultation, ATSDR, has reviewed this public health consultation and concurs with the findings.

Roberta Erlwein
Chief, State Program Section, SSAB, DHAC, ATSDR

Table 1

Summa Canister Air Sample Detections - 9/17/04

Compound	Result (ppb)	Result (ug/m ³)	MDH Acute HRV (ug/m ³)	MDH Chronic HRV (ug/m ³)	EPA Reference Concentration (RfC; ug/m ³)	MDH Interim Screening Concentration (ISC; ug/m ³)	Mean Background Level* (ug/m ³)
Acetone	14.26	34.51			350		
Benzene	0.53	1.69	1,000	1.3 - 4.5			1.6
Bromodichloromethane	0.01				70		
Bromomethane	0.01	0.04		5			
1,3-Butadiene	0.1	0.23		0.04			
Carbon Disulfide	0.61	1.93	6,000	700			
Chloromethane	1.83	3.77			90		
Cyclohexane	0.08	0.28					
Dichlorodifluoromethane	0.75	3.71			200		
1,2-Dichloroethane	0.01	0.04				0.38	
Ethylbenzene	0.12	0.52	10,000		1,000		0.7
4-Ethyltoluene	0.04						
Methyl Ethyl Ketone	0.39		10,000				
Methylene chloride	0.08	0.28	10,000	20			0.4
n-Heptane	0.12	0.50					
n-Hexane	0.37	1.32		2000			
1-Propene	8.63						
Styrene	0.05	0.21	21,000	1000			0.2
Tetrachlorethene	1.07	7.37	20,000			3.33	0.4
Tetrachloromethane	0.14						
Toluene	0.78	2.94	37,000	400			4.8
1,1,1-Trichloroethane	0.03	0.16			2,200		
Trichlorofluoromethane	0.33	1.85			700		
Trichloromethane	0.04				700		
Trichlorotrifluoroethane	0.11						
1,2,4-Trimethylbenzene	0.16	0.79			6		
1,3,5-Trimethylbenzene	0.05	0.25			6		
Vinyl acetate	0.42	1.48		200			
Xylenes	0.5	2.17	43,000		700		3.3

HRV = Health Risk Values, March 2002

*As reported in Sexton et al 2004



Figure 1: Site Location

Figure 2: Smoke Event

Photo by MDH

Smoke from Facility Vent



Wind Roses for Minneapolis/St. Paul Intl.

This wind rose data is from all non-calm winds three times a hour from approximately October 1996 to March 2001. Note that the plots below are for wind direction only and not an indication of wind speed.

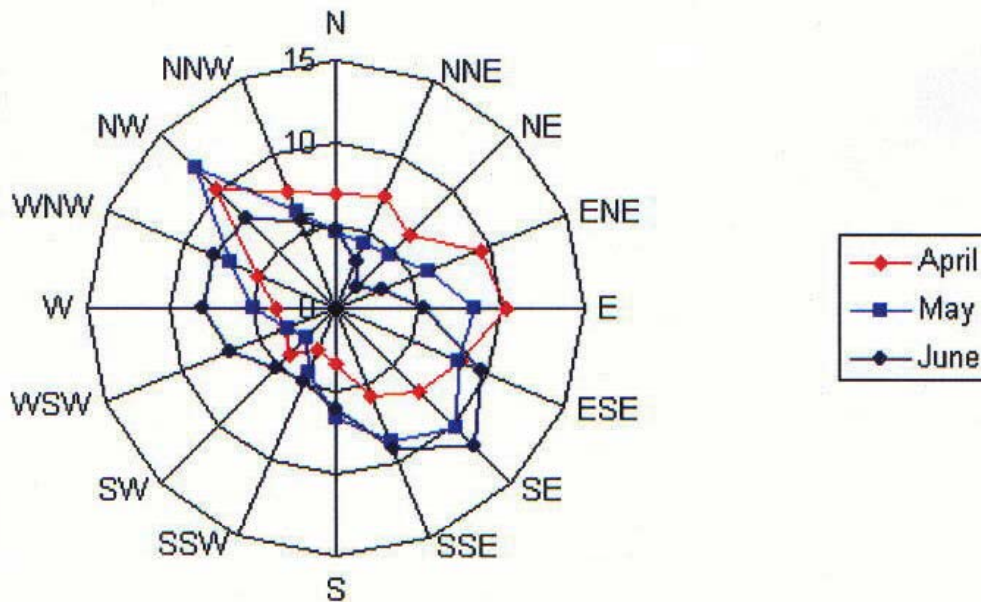
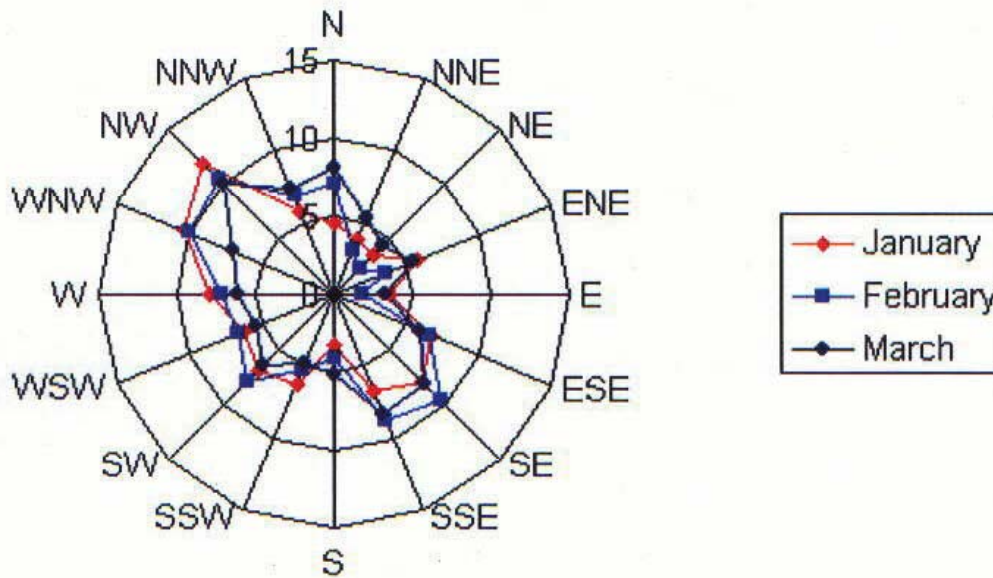
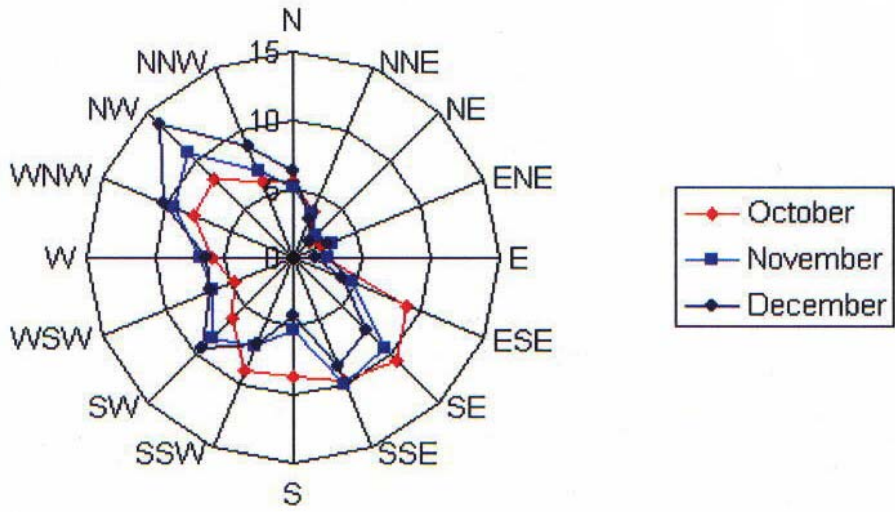
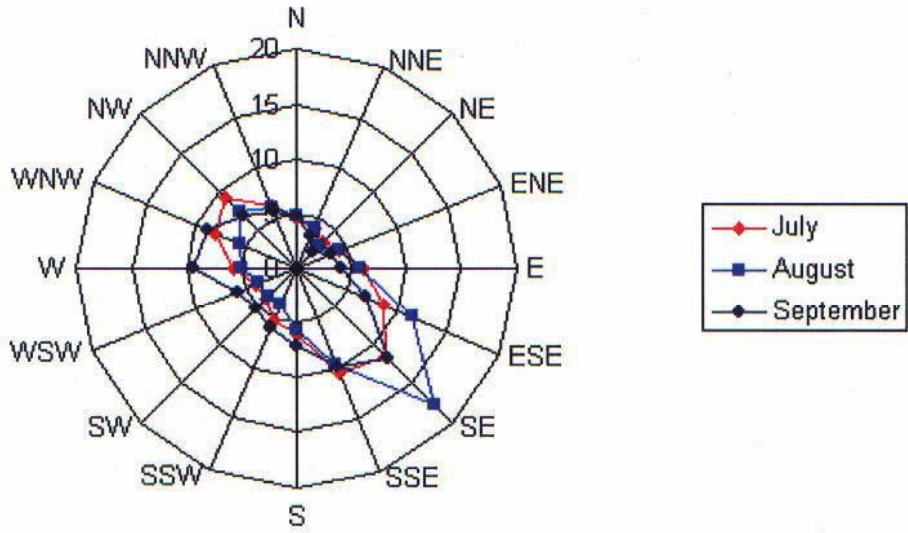


Figure 3a



Special thanks to:

Mark Seeley, Martha Shulski, Kenny Blumenfeld and Amy Cecchi.



[Return to Minnesota Climatology Working Group Main page](#)

Figure 3b

Appendix 1

Complaint Summary

Date	Time	Wind Direction	Wind Speed, mph	Material	Narrative
04/01/03	11:38 AM	NE	11.5	Smoke	Blue smoke is coming from plant and all over the neighborhood.
06/18/03	7:17 PM	NNE	18.4	Smoke	Caller said the RP has smoke coming out of a duct on the roof, and the smoke smell is bothering callers throat, and giving him a upset stomach.
07/24/03	8:39 PM	S	15.0	Blue smoke	Blue smoke pouring into neighborhood affecting throat, lungs.
07/27/03	10:36 AM	NNW	8.1	Smoke and odors	Heavy smoke is coming from the RP and is irritating the callers throat.
08/03/03	9:34 AM	N	5.8	Blue smoke	Caller noticed a cloud of blue smoke rolling across his yard when they sat down for breakfast. The odor has infiltrated his house, his children are bothered by the odor.
09/20/03	4:49 PM	S	15.0	Smoke	White smoke, smells like burning oil, irritates throat, lungs, breathing. Caller has children and is concerned about them.
09/30/03	8:35 AM	NNW	16.1	Smoke	Heavy smoke, caller says the smoke is bothering him and he is concerned about his young children.
10/03/03	12:52 PM	N	13.8	Burning diesel type odor	Caller complaining of a burning diesel type odor and a white smoke coming from the RP. Caller stated that the smoke causes breathing difficulties and is concerned about his children being exposed to the smoke.
04/04/04	9:35 AM	Var.	5.8	Blue smoke	RP is emitting blue smoke and that is bothering the callers throats, and is concerned about childrens health.
05/24/04	8:47 AM	E	10.4	White smoke	Caller has small children and is reporting RP has emitted white smoke off and on all weekend long. Caller is concerned that children cannot play outside.
06/04/04	8:25 PM	SE	8.1	Smoke	Plant is blowing hideous amounts of bluish-white smoke into neighborhood. Irritating to throat and lungs, nauseating, also headache. Directly across the
06/08/04	7:36 PM	N	12.7	Odor	Caller said the odor was causing throat irritations and their eyes to water.

06/10/04	10:42 PM	E	17.3	Pungent odor	Caller stated that the company has a strong pungent odor coming from it and states that it is hard to work in garden because of the odor. Caller wanted stated that he has young children and is afraid to take them out
06/15/04	9:14 AM	ESE	8.1	White smoke	Caller complaining of a white smoke in the neighborhood from the RP. When the caller is outside the smoke irritates throat. Caller is concerned about letting kids go outside. This smoke problem occurs randomly, no regular cycle to the emissions
07/16/04	8:18 PM	NNE	5.8	Smoke and fumes	Whites smoke and fumes coming from plant cause are causing throat and lung irritation, like a slight asphyxiation, difficulty to breath.
07/22/04	8:22 PM	NNE	17.3	smoke/fumes	Caller complains of bluish-white smoke billowing out of a stack and into caller's yard and neighborhood. Very difficult breathing outside, sort of asphxyiating. Pungent, burning-oil smell.
08/12/04	3:31 PM	NW	5.8	Odor, smoldering oil	Very strong odor of smoldering oil.
08/13/04	2:53 PM	NNE	10.4	Metalic type odor	Caller complaining of a metalic odor from the RP whenever the wind blows the wrong direction.
08/21/04	7:44 PM	SSE	9.2		Caller was walking on frontage road of Hwy 7 at Quebec on Thursday at 0600, noticed "smoke-like" smell which burned nose and caused nausea. Again today at 7:15 pm, same. Strongest by Lake St and Taft. Suspect metal-working shop.
08/22/04	11:31 PM	NNE	10.4	Haze, odor	Emissions from plant woke up caller with a dried out, sore throat. Then noticed haze in the house, and odor.
08/23/04	6:54 PM	E	19.6	Misty white smoke, rubbery smell	Caller complaining of a white smoke from the RP. Caller thinks the color might be from the higher humidity. Caller is experiencing itchy eyes.
09/05/04	4:05 PM	SSE	17.3	Fumes	"Pungent, metallic" fumes have been blowing towards caller's house since yesterday, headache and sore throat resulting.

09/07/04	8:15 PM	NE	10.4	Strong odor	Fumes from the plant are causing the symptoms where their throats are tingling. Caller also gets a headache. The caller wants a call back from the Health Dept. and the County. The MPCA has called back on other reports.
09/12/04	11:29 AM	S	10.4	Bluish white smoke, metallic smell	Caller was outside filming the pollution and now his chest hurts and there is a metallic taste on his tongue. Caller stated that it is often worse on weekends when fewer management personnel are on-site. Caller really would like someone from the county
09/17/04	6:45 PM	SW	5.8	Yellow smoke, bluish smoke	Caller reports yellow smoke coming from RP making it difficult to breathe. One hour later a bluish smoke was emitted.
09/18/04	7:45 PM	ESE	15.0	Stronge fumes	Caller reporting strong fumes that are still present. Fumes are making it difficult for caller to breathe when he is outside.
09/19/04	8:42 PM	SSE	16.1	Fumes and Smoke	Caller complains of fumes and smoke while he is outside. He had throat soreness and finds it hard to breath. Caller states he can't take his kids outside.
09/28/04	8:42 AM	NNE	5.8	Smoke	Caller reporting lungs irritated by release when he is outside.
10/06/04	9:25 AM	SW	10.4	Smoke	Calles states the smoke is coming from the plant and into yard. Caller is trying to work in yard and cannot with all the smoke.
10/18/04	8:26 AM	E	11.5	Smoke and odors	Caller complaining of smoke and odor from the RP. The caller noticed it while walking dog and cannot be outside for any length of time.
10/22/04	8:19 AM	ESE	12.7	Fumes	Caller is complaining of fumes.
10/25/04	6:02 PM	NNE	6.9	Odor and Smoke.	Odor and smoke were bad this morning, now it is just odor.
10/26/04	12:57 PM	ENE	15.0	Smoke and odors	Caller reporting excessive smoke and odor from RP all day.
10/26/04	9:18 PM	E	13.8	Fumes	Fumes are causing upper respiratory problems. A burning, heat like feeling.
11/01/04	12:47 PM	ENE	12.7	Fumes	Caller reports strong fumes that has caused a burning sensation in lungs.
11/19/04	12:56 PM	E	11.5	Odor	Odor and fumes are very stong today.

11/25/04	9:04 PM	ESE	12.7	Fumes	Caller noticed "metallically, acidic type of smell, odor, fume; you can feel it when you breath." Causes burning in chest like heat, also throat.
11/26/04	1:08 PM	E	10.4	Fumes	Caller is complaining of fumes.
12/05/04	4:07 PM	E	17.3	Smoke, fumes	Caller reports smoke and fumes all day. Was outside working for 1-1/2 hours this afternoon, got light-headed, a very dry mouth, and metallic taste, went inside and sat down and vision got blurry for 45 minutes. Had to go to ER.
12/09/04	10:32 AM	E	10.4	Fumes	Fumes is the complaint
12/25/04	3:10 PM	NE	8.1	Odors	The odor is really strong and has given the caller a very strong metallic taste in the mouth. Caller has been inside for 20 minutes and can still taste it.
01/04/05	8:56 PM	N	16.0	Strong odor, smoke and fumes	Strong odors and smoke, is irritating the callers throat, making throat tighten up. And bothering eyes.
01/05/05	6:50 PM	N	10.0	Fumes	Plant putting out fumes that are causing throat and eye soreness and irritation again tonight.
01/11/05	3:49 PM	NE	6.9	Smoke and odor	Caller reporting bad odor and smoke.
01/19/05	9:12 PM	ESE	11.5	Metallic fumes	Nearby plant is putting out a metallic tasting fume;so strong he caller can't stand outside. Irritating to throat.
01/20/05	12:13 PM	ENE	10.4	Fumes	Caller states that the fumes leave a metallic taste in his mouth
01/22/05	10:34 AM	N	15.0	Odor, fumes	Caller was out shoveling when the odor and fumes overcame him causing eye, throat, and dizziness.