

Public Comments of  
**Flint-Genesee United for Action, Justice  
and Environmental Safety**

Presented to  
Air Quality Division,  
Michigan Department of Environmental Quality

Concerning the Proposed S & S Metal Processing Metal  
Shredding Facility and  
its Proposed MDEQ-AQD Air Discharge Permit

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## **1 Introduction**

This document is a policy statement by the community organization, Flint Genesee United for Action, Justice and Environmental Safety, and a public comment submitted to the Air Quality Division of the Michigan Department of Environmental Quality (MDEQ). Both the policy statement and the public comment concern a proposed metal shredding facility to be constructed by S & S Metal Processing (currently Spooner Metal Recycling) in Northeastern Flint and a proposed MDEQ-AQD air discharge permit for this proposed facility.

Flint Genesee United for Action, Justice and Environmental Safety (FGUAJES) is a community and citizen's organization deeply concerned about sustainable development, public health and safety, and environmental justice. FGUAJES pursues these concerns...

by educating its members and the broader community through dissemination of information;

by investigating and monitoring industrial activities and land uses

by advocating for environmental and public health protection to governmental environmental agencies, public officials and decision-makers; and

by promoting pollution prevention.

## **2 FGUAJES Policy Statement Concerning the Proposed S & S Metal Shredding Facility**

FGUAJES opposes both the proposed S & S Metal Shredding Facility and issuance of the proposed air discharge permit for the proposed facility. FGUAJES takes this action because the proposed facility and the pollution that is either implicitly or explicitly authorized by the proposed permit is a further detriment to the health, safety and quality of life in Northeastern Flint, Mt. Morris and Flint Township (the Northeastern Flint community corridor).

The Northeastern Flint community corridor is already heavily affected by the blighting influences of several significant industrial facilities, major stationary source air dischargers, brownfields with unresolved problems and undesirable and high impact land uses.

The people of the Northeastern Flint corridor and their community are already significantly affected by current toxicant contamination and lessened availability of health care to deal with these and other community public health problems. The proposed

facility will add to these cumulative burdens and overall assault on community environmental justice.

Already, the sponsors of the S & S metal shredder have committed an illegal act by commencing construction of the facility without first having a permit to do so. The existing Spooner operation is already a visually blighting influence on the surrounding community.

The statement by the facility's sponsor that no pollution would be emitted by the proposed facility<sup>1</sup> does not bode well for the community's trust in the sponsor's candor and willingness to address all outstanding community, environmental and public health issues posed by installation and operation of this facility.

Permitting of the S & S shredder is a significant state action that will affect the environment of our Northeastern Flint community. Yet no consideration has been given to the overall environmental impact of the proposed facility other than air emissions. The State of Michigan has not considered in any way other environmental impacts of this facility, including noise, blight, traffic and other detrimental facility impacts.

In subsequent sections, FGUAJES offers specific technical comments concerning the proposed air permit for the facility. The presence of technical comments on the provisions of the proposed permit and any suggestions offered on the contents of the proposed permit should not be interpreted by MDEQ-AQD as undermining the fundamental opposition of FGUAJES to permitting and construction of this proposed facility.

### **3 Technical Comments of FGUAJES Addressing Air and Waste Management Aspects of the Proposed Permit and Proposed Metal Shredding Facility**

#### **3.1 The Existing S & S Metal Processing/Spooner Metal Recycling Site Should Receive a Multi-Media Compliance Inspection Prior to any Permit Issuance**

The existing operations at the S & S Metal Processing/Spooner Metal Recycling site should be inspected to determine whether such existing operations and facility are presently in compliance with all applicable environmental requirements.

FGUAJES calls on both U.S. EPA and MDEQ to conduct a multi-media inspection of this facility before issuing any air discharge permit for metal shredding operations.

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<sup>1</sup> Documented in a July 25, 2000 memo from Robert Lamrouex to Michael Koryto and Thomas Hess, as related to R. Lamrouex by Chris Machniak, Flint Journal who spoke with the project's sponsor, Mr. Spooner.

MDEQ Air Quality Division should not issue any air discharge permit for increased and/or new operations if the existing facility is found to be out of compliance with multi-media environmental requirements.

The multi-media inspection should include review to determine whether S & S Metal Shredding/Spooner Metal Recycling is presently complying with any industrial storm water permit requirements. The facility's neighbors immediately to the north both appear to have such permits, but there is no record in EPA's PCS system that S & S Metal Processing/Spooner Metal Recycling presently has an industrial storm water permit that is potentially required at this site. This review is particularly important given that the site is very near to the Flint River.

Similarly, EPA and MDEQ should inspect S & S/Spooner to determine whether the present facility operations are complying with all requirements to prevent releases of CFCs and HCFCs from auto and appliance cooling systems, whether the facility is maintaining required material disposition and training and equipment records as to the management, recycling and reclamation of CFCs and HCFCs.

Finally, the facility should be reviewed to determine whether any unresolved soil contamination problems exist with oils and/or PCBs or any other matter under the jurisdiction of the MDEQ Environmental Response Division. For example, all sites where any open burning has taken place, including any open burning that may have taken place in any copper wire recovery operation, should be evaluated for soil contamination and potential environmental response.

### **3.2 The S & S Metal Processing Application Fails to Comply with MDEQ-AQD Rules on the Completeness of Permit Applications**

#### **3.2.1 MDEQ-AQD Permit Application Completeness Rule**

MDEQ-AQD rules on the required elements of permit applications provide:

Rule 203. (1) An application for a permit to install shall include information required by the commission on the application form or by written notice. If considered by the commission to be pertinent to evaluation of the equipment for which a permit is sought, the information shall include, but is not necessarily limited to, the following: (a) The expected composition of air contaminant stream, both before and after installation of an air-cleaning device, including emission rate, concentration, exhaust gas volume, and exhaust gas temperature.

(b) The expected physical and chemical characteristics of air contaminants.

(c) Details of air pollution control measures and air-cleaning devices, if any, including a description, design parameters, and anticipated performance.

(d) The location and elevation of the emission point and other factors relating to dispersion and diffusion of the contaminant in the outer air; the relation of the emission point to nearby structures and window openings; and other information necessary to appraise the possible effects of the air contaminant.

(e) The method of disposal of wastes resulting from operation of the process equipment or air-cleaning devices.

(f) A plan for reduction of emissions during air pollution alerts, warnings, and emergencies as required by subrule (1) of rule 1307.

(g) Information, in a form prescribed by the commission, that is necessary for the preparation of an environmental impact statement if, in the judgment of the commission, the equipment for which a permit is sought may have a significant effect on the environment.

(h) Data demonstrating the effect of the air contaminant emissions on human health and the environment.<sup>2</sup>

### **3.2.2 The S & S Metal Processing Application is Fundamentally Deficient and Not Approvable**

A detailed review of the S & S Metal Processing application was conducted by the commentor. In addition, a technical consultant to commentor discussed the facility with MDEQ AQD Permit Engineer Julie Brunner.

At this writing, nothing in the S & S Metal Processing 3 page application or in any other materials supplied by the applicant provides all of the necessary data elements for a complete application.

The applicant never submitted information on “expected composition of air contaminant stream, both before and after installation of an air-cleaning device, including emission rate, [and] concentration.” (Violation of Rule 203(1)(a))

The applicant never submitted information on “the expected physical and chemical characteristics of air contaminants.” (Violation of Rule 203(1)(b))

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<sup>2</sup> Mich Adm Code R 336.1203



The applicant has failed to submit “details of air pollution control measures and air-cleaning devices, if any, including a description, design parameters, and anticipated performance.” No information has been submitted that is detailed design information for the “scrubber” proposed for installation. The applicant failed to submit information on the design pressure drop, scrubber flow rate, and design efficiency of the scrubber. No detailed drawings and model calculations were submitted that indicates the detailed design of the hood(s) on the shredder and its expected numerical collection efficiency. (Violation of Rule 203(1)(c))

Applicant has failed to submit detailed information on the handling of waste residuals from the pre-processing of items to be shredded that is inherent in the decision concerning Best Available Control Technology for Toxics and information on the large volume of post processing waste expected from the shredding process. (Violation of Rule 203(1)(e))

### **3.2.3 MDEQ-AQD Has Failed to Enforce its Rules on Applications for Permits to Construct and Failed to Properly Determine the Environmental Impacts of the Proposed Facility and, if the Permit is Granted, Such Failures Will Mean that MDEQ-AQD Will Have Abused its Discretion and Violated the Natural Resources and Environmental Protection Act**

Notwithstanding claims by MDEQ-AQD that they have no power to regulate noise and truck traffic, which will be important community impact concerns, MDEQ-AQD nevertheless has the power under its rules to compel an applicant to submit such information for the purpose of preparing an environmental impact statement.<sup>3</sup> They have failed to do so in the case of S & S Metal Processing.

As noted above, MDEQ has failed to ensure that the applicant has fully complied with the permit to install application completeness rules as to air discharge impacts. As a result, MDEQ has not obtained from applicant all needed information in order to determine all likely emissions from the facility and the ability of emission control equipment to properly control such emissions. As such, any exercise by MDEQ-AQD to determine the nature of health and environmental impacts from the facility is subject to error. Under the circumstances, actual issuance of a permit made on the basis of an incomplete application would further violate MDEQ-AQD rules.

In total, MDEQ has abused its discretion by failing to properly determine the health and environmental impacts of the proposed facility as it is required to do so under the Michigan Environmental Protection Act provisions of the Natural Resources and Environmental Protection Act at MCL 324.1705(2) and the Michigan Constitution 1963,

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<sup>3</sup> Mich Adm Code R 336.1203(1)(g)

Art. IV, § 52. Ultimate issuance of the proposed permit when the permit applicant has failed to submit a complete permit application is also an abuse of discretion.

**3.3 S & S Metal Process/Spooner has no Record of Manifesting Hazardous Waste Items, Other than a Single Shipment of Ignitable Wastes in 1998**

In the case of S & S Metal Processing, a review of MDEQ's Hazardous Waste Query System shows that Spooner Auto Parts has an EPA number of MIG000049089, as a conditionally exempt small quantity generator.

MDEQ's T-BACT review significantly relies on pre-processing requirements to remove refrigerants, antifreeze, batteries, gas tanks, mercury switches, etc. The applicant should have been already doing many of these types of pre-processing activities under current EPA and MDEQ waste rules. Commentors contacted the MDEQ Waste Management Division to determine whether Spooner/S & S has been generating manifested hazardous waste at the present site. Pursuant to this inquiry, Spooner Auto Parts was found to have generated only a single hazardous waste shipment of D001 (ignitable) waste since 1997 when they obtained their EPA number. This facility shows no hazardous waste manifests for such items as mercury switches, antifreeze or waste PCB starting capacitors.

Under the circumstances, the proposed provisions of the permit are not adequate to ensure that the required T-BACT-related pre-processing of items to be shredded will be adequate since S & S/Spooner does not have a demonstrated history of generated manifested hazardous waste shipments for all of the types of hazardous wastes that they already should have been generating. All record-keeping requirements should be amended to require quarterly reporting to MDEQ of wastes collected, disposed and/or manifested so that this information is available to the public.

**3.4 The Proposed Permit Fails to Regulate Site Management and Handling of Pre-Processing and Post-Process Wastes through Enforceable Plan Elements**

As noted above, MDEQ-AQD failed to require applicant to submit detailed information about the handling and management of both pre-processing and post-process wastes. MDEQ-AQD should not issue any permits for a metal shredder without both detailed information submittal by the applicant and a required, enforceable pre-processing and post-process waste management plan subject to prior public comment and MDEQ-AQD approval. This information should also include any emissions associated with pre-processing operations and/or equipment, such as emissions occurring from the decanting and/or degassing of gasoline tanks. The current application is deficient because potential emissions associated with pre-processing activities were not considered.

Given the extensive reliance of the Best Available Control Technology for Toxics decision on pre-processing of waste materials to avoid process-related toxic emissions, considerably more substance should be required of the applicant in order to ensure that pre-processing is effective. An enforceable pre-processing and post-process waste plan is essential for this purpose.

The pre-processing and post-process waste management plan elements should address the following issues:

The Plan should require that the operators be the responsible party to carry out pre-processing removal rather than the operators merely stating that metals items will not be accepted without prior removal. A failure to ensure that S & S Metal Processing is responsible means that the environmental performance of any such pre-processing requirements will not be enforceable against S & S Metal Processing. More importantly, a failure to require that S & S Metal Processing be responsible for removal is likely to mean that significant uncontrolled removal by non-permitted parties and subsequent surreptitious and environmentally damaging removal and disposal is likely to occur. For example, if S & S Metal Processing merely states that it will not accept cars with gas tanks, then gas tanks will be likely to be disposed in the host community with potential for safety hazards and pollution of both air and water with volatile organic compounds.

The issue of who is actually responsible for carrying out the pre-processing removal and inspection of waste metal items to determine that pre-processing has taken place is an important issue to clarify. According to one MDEQ document, the applicant stated:

“Mercury switches easy to remove in his yard **but other yards will have to check.**”<sup>4</sup>

The implication of this statement by the applicant is that the applicant will not rely on their own inspection and pre-processing routine if a vehicle has been transported from another scrap yard. This is an unacceptable situation that must be clarified to ensure that the applicant is always responsible for inspecting and pre-processing each vehicle and white good to ensure that all permit/plan pre-processing requirements for toxicant removal has taken place.

The applicant’s statement opens the entire issue of the type of materials that will be accepted for shredding at this site. The applicant must be prohibited from accepting scrap vehicles which have already been subjected to auto crushing where pre-processing of vehicles to remove mercury, oil, antifreeze, CFCs/HCFC’s, etc. was not performed.

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<sup>4</sup> September 5, 2000 telephone notes written by Julie Bruner on a conversation with Scott Spooner.

If the applicant operates a car crushing or metal shearing operation, the permit and waste plan elements must be amended to clearly ensure that pre-processing is to take place before such crushing or shearing operations take place. Prior crushing and/or shearing by the applicant or by another yard should not serve as a defense against failure to subject vehicles to T-BACT related toxicant removal pre-processing. The permit should explicitly require that vehicles which have not been pre-processed for whatever reason not be fed to the metal shredder.

The Plan should identify all types of wastes expected to be generated from both pre-processing of metal items and the resulting post-processing residues.

The Plan should address the storage time for all hazardous wastes and constituents that are collected under the plan.

The Plan should address measures to ensure that emissions will be controlled from hazardous waste constituents while in storage.

The Plan should limit accumulation of auto shredder residue to not more than one week's accumulation onsite. Approximately 500 pounds of auto shredder residue is generated for every vehicle processed. If the facility can shred 750 tons per day, that is equivalent to about 625 vehicles per day at 1.2 tons per vehicle. Such a condition would lead to generation of as much as 156 tons of auto shredder residue per day. Under such conditions it would not take long to generate very large piles of auto shredder residue on site unless the capability to store auto shredder residue is limited. Piles of auto shredder residue are unsightly and may generate nuisance litter. Even more important is the potential of piles of auto shredder residue to catch fire. Auto shredder waste fires will likely produce large amounts of highly toxic chlorinated dibenzo-dioxins/furans, toxic metals, toxic organic compounds, obnoxious gases and irritating particulate matter. The potential emissions during auto shredder fires mitigates for restricting the maximum storage of auto shredder residue to no more than one week's inventory.

The Plan should identify ultimate sites of disposal, the ultimate disposition of all wastes generated and the specific nature of proper management and "proper disposal" of waste materials.

The Plan should address proper contingency actions in the event of spills or fires of such hazardous and non-hazardous wastes.

The Plan should require contemporaneous recordkeeping and quarterly reporting to MDEQ on the amounts of all wastes that are generated and disposed and incidents when such wastes were spilled, caused emissions or were otherwise not contained or restrained from causing pollution of the air, water or land. Quarterly reporting is necessary to ensure that the public can know about the efficacy of T-BACT-related

preprocessing of items to be shredded and to ensure that the operator carries out required duties implicit in T-BACT without the need for inspections to verify that such processing is taking place.

**3.5 There Are No Provisions in the Permit to Require Pre-processing Removal and Proper Disposal of PCB-Containing Capacitors**

Applicant states that it intends to shred “white goods” in the proposed process. However, many older appliances will contain motors that have PCB-containing starter capacitors. The permit should require removal of these capacitors during pre-processing operations to ensure they do not enter the shredder as required by T-BACT. Such capacitors should be manifested and shipped to a hazardous waste incinerator licensed for PCB disposal. A failure to require pre-processing control of PCB capacitors is likely to result in multi-media PCB contamination at this site.

**3.6 The Applicant’s Illegal Commencement of Construction Without a Permit Has Prejudiced MDEQ Efforts to Limit Impacts from the Proposed Facility**

The applicant illegally commenced construction of the proposed facility without a permit without first having obtained a permit from MDEQ. The applicant has constructed the foundation for the unit, set up electrical service for the operation and purchased the shredding unit.

MDEQ has not subjected the applicant to a penalty for violation of Rule 201 for starting construction without a permit.

In an apparent attempt at mitigating some of the impact from the proposed facility on its neighbors, MDEQ AQD asked the applicant to...

“....move shredder away from the north fence to the middle of the property.”<sup>5</sup>

The applicant replied...

“....as for moving the shredder to the middle of the property...the most stable foundation is along the north fence. The middle of the yard is mainly gravel.

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<sup>5</sup> August 24, 2000 memo on telephone conference between Julie Brunner and Scott Spooner

Also, power comes in on the north side and they have already received [illegible] to move power poles. Foundation is already in and to (sic) costly to move.”<sup>6</sup>

There was no documentation submitted to support any of the statements concerning the feasibility of putting a foundation in the middle of the property and none was requested by MDEQ-AQD. Ultimately, MDEQ-AQD has accepted the applicant’s argument that their investment inherent with their illegal commencement of construction without an approved permit and without site approval overrules MDEQ-AQD efforts to mitigate the facility’s environmental impacts on applicant’s neighbors through a requirement to move the proposed facility to the middle of the applicant’s property.

### **3.7 Issues of Emissions Characterization, Selection of Emission Controls and Permit Emission Limitations**

#### **3.7.1 MDEQ-AQD Could Have Selected a More Stringent Particulate Emission Limitation Reflecting the Control Efficiency of the Best Unit Examined**

MDEQ-AQD looked at a range of particulate emission information from 5 facilities and ultimately selected a particulate emission limitation equivalent to 0.05 lbs of particulate matter per 1000 lbs of exhaust gas, or 9.2 lbs of particulate matter per hour.<sup>7</sup>

MDEQ-AQD was also aware of a large metal shredding unit in Wisconsin, the Miller Compressing Company facility, which employs a venturi scrubber along with a cyclone rather than just the spray tower and cyclone proposed for the S & S Metal Processing facility. The Miller unit processed 250 tons per hour as opposed the S & S Metal Processing rate of 60 tons per hour. Yet, the Miller unit has an emission limitation of 8.65 lbs/hour of particulate matter and was tested at 7.21 lbs/hour in an actual stack test. The emission control train on the Miller unit obviously achieves a greater control efficiency than the assumed capability of the unit at the S & S Metal Processing facility.

As such MDEQ-AQD did not require the most efficient particulate matter control system on the S & S Metal Processing facility and instead accepted the applicant’s control system without any guarantee of specific operational control efficiency and without detailed knowledge of the design operating parameters for the applicant’s control equipment. Then, MDEQ-AQD set an emission limitation allowing larger emissions for the S & S processing facility than both the permit limit and testing results that was

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<sup>6</sup> August 28, 2000 memo on telephone conference between Julie Brunner and Scott Spooner.

<sup>7</sup> By way of comparison, the Genesee Power Station is permitted to emit 15.7 pounds per hour.

achieved at the larger Wisconsin facility using a state of the art venturi scrubber/cyclone emission control system.

### **3.7.2 Particulate Matter Control Requirements are Virtually Unenforceable on the Proposed Facility without a Stack Test**

The proposed permit contains no specific enforceable requirements, other than the requirement for a malfunction abatement plan, that ensures a minimum level of scrubber performance, minimum scrubber pressure drop and/or minimum scrubber liquid flow rate. There is no requirement for recordkeeping to ensure that scrubber performance is maintained. There is no requirement for a visible emission monitor to detect particulate matter in the exhaust of the system. As a result, there is no practical way that the particulate emission limitation can either be directly enforced or enforced as a practical matter by a surrogate operational parameter, short of conducting a stack test at the site. This is an unacceptable level of compliance assurance, particularly in light of MDEQ-AQD's lack of design and operational performance data for the planned scrubbing unit and the requirement that only a single stack test be employed.

### **3.7.3 MDEQ-AQD has Failed to Include Stack Exhaust Toxic Emission Limitations in the Proposed Permit for Toxic Metals**

Nothing in the permit contains legally enforceable requirements limiting toxic emissions from the scrubber exhaust for the proposed facility. Although the applicant is subject to a single stack emission test requirement for particulate matter and a selection of toxic metals, there are no legally enforceable requirements that limit emissions of toxic metals from the proposed facility. The applicant is free to discharge any amount of toxic metals from the proposed facility since the applicant never submitted expected toxic emission amounts in their application and there are no legally enforceable toxic emission limitations.

### **3.8 The Requirement on Operation of the Water Spray for the Shredding Chamber Should be Directly Incorporated into the Permit, Rather than Merely Being an Element of the Fugitive Dust Control Plan**

At the present time, the water spray requirement for the shredder chamber is only shown in the fugitive dust control plan. However, the water spray in the shredding chamber is integral to more than just fugitive dust. Failure to maintain the water spray in the shredding chamber is likely to result in increased potential for fires, increased emissions of odors and volatile organic compounds, increased uncontrolled emissions escaping the shredder hood and increased higher temperature thermal degradation of paint

and auto fluff materials. Because the water spray is an integral part of the emission control system, the permit should be amended to require that the facility not be operated unless the shredder water spray system is maintained and is in good operating condition.

Water spray devices may be subject to freezing and operational disruption during cold winter conditions. The facility must not be allowed to operate while the water spray system is not operational as a matter of an enforceable permit condition.

### **3.9 The Permit Contains Does Not Contain a Stringent Visible Emission Limitation on Fugitive Emissions Escaping from the Top and Bottom Shredder Hoods**

The inherent design of the facility will allow emissions of process gases to escape collection by the hoods on the top and bottom of the shredder. Photos of other units show that significant steam escapes from these hood locations. It simply cannot be assumed that these uncollected gases will not contain particulate matter.

The permit should be amended to ensure that fugitive emissions from the shredder hood not exceed 5% opacity on an instantaneous basis at the place where there is no more visual evidence of water vapor. In the absence of a specific provision of this nature, such emissions could be as high as 20% opacity on a 6 minute average. This would allow too much excessive fugitive PM matter from this type of source.

### **3.10 The Fugitive Dust Control Plan Contains No Visible Emission Limitations**

The proposed fugitive dust control plan for the facility does not contain any enforceable visible emission limitations. A maximum visible emission limitation of 5% should be placed on all road, piles and conveyors at the site.

### **3.11 Open Burning**

The permit should include a specific requirement that there will be no open burning onsite. In particular, applicant should be specifically prohibited from wire burning and recovery operations at this site.



### **3.12 Mercury Process Input, Emissions and Control at the Proposed Facility**

#### **3.12.1 MDEQ-AQD Mercury Emission Calculations Underestimate the Likely Amount of Mercury Found in Scrap Vehicles That Would Potentially be Introduced into the S & S Metal Processing Metal Shredder**

MDEQ-AQD used some data from the Minnesota Pollution Control Agency suggesting a total of 43 mercury switches for every 100 vehicles sampled. However, this data is from a very small sample using only the scrap vehicle intake for four salvage yards for a single month.<sup>8</sup>

MDEQ should have instead used historical information from vehicle manufactures on the use of mercury switches in vehicles, or MDEQ should have used a “worst case” estimate of two convenience light mercury switches per vehicle (one in the hood and one in the trunk).

In addition, MDEQ-AQD should have considered other uses of mercury in vehicles, which include mercury in anti-lock braking systems, active ride control systems, high intensity lights and virtual image instrument systems.<sup>9</sup>

#### **3.12.2 MDEQ-AQD’s Estimation of Mercury Emissions Did Not Consider Mercury Emissions from Fugitive Gas Release Around the Metal Shredder Hooding**

Photographs in the MDEQ-AQD files of other metal shredding facilities show that hoods over the tops and the bottoms of metal shredding units do not collect all of the process gases generated. Steam emissions from the spraying of water on shredder elements are clearly visible. If steam emissions are apparent, other emissions of particulate matter and mercury should be possible from this fugitive emission source.

In an August 23, 2000 telephone conference with AQD Permit Engineer Julie Brunner, the applicant claimed that the hood capture efficiency was 100% to 95%.<sup>10</sup> However, no detailed technical drawings showing the collection hoods were ever submitted by the applicant and no detailed justification exists in the file to justify the 100% to 95% hood capture efficiency assumption. MDEQ ultimately assumed the metal

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<sup>8</sup> Minnesota Pollution Control Agency, Automobile Shredder Residue Report, June, 1995, Page vi

<sup>9</sup> See PDF page 5 of <http://www.epa.gov/grtlakes/bnsdocs/hgsbook/auto.pdf>

<sup>10</sup> MDEQ-AQD file, handwritten note dated 8/23/2000

shredder hooding would have a 90% capture efficiency “as a conservative number” while still not having detailed design information on the actual hooding to be installed.

MDEQ-AQD never considered that process gases generated in the metal shredder that might contain mercury would be discharged as fugitive emissions around the metal shredder hoods. MDEQ-AQD mercury calculations assume that all mercury introduced into the metal shredder would be entrained into the process off-gases collected with 100% efficiency by the emission control system.

### **3.12.3 MDEQ-AQD Has Unrealistically Over-Estimated Mercury Control Efficiency for Mercury-Containing Process Gases Controlled by the Proposed Cyclone-Wet Scrubber Emission Control System**

MDEQ-AQD has assumed that the mechanical cyclone will provide 50% control efficiency for mercury in the shredder process off-gas and that the wet scrubber will achieve 90% control efficiency for mercury in the scrubber inlet stream.<sup>11</sup> MDEQ-AQD staff appear to have assumed the same control efficiencies for mercury as might be expected for particulate control efficiencies.<sup>12</sup> MDEQ-AQD calculations in this memo thus effectively assume there is a 95% overall control efficiency in the proposed emission control system. This level of emission control efficiency, together with calculated process inputs is used to calculate an upper bound mercury emission of 4-5 lbs of mercury per year with 2080 hours of operation.

Although MDEQ-AQD does not have in hand any details concerning the flow rate and pressure drop of the proposed scrubbing device, and the only drawing provided appears to show only a single stage water spray chamber with unknown scrubber liquid recirculation rate, MDEQ has nevertheless assumed that control efficiency for the proposed emission control system will be very high at 95%.

MDEQ-AQD’s assumed control efficiency is significantly higher than the mercury control efficiency found in pilot scale tests using far more advanced state of the art wet scrubbing systems for a hazardous waste incinerator, which found an average mercury control efficiency of 87% with a low-side efficiency test of 67%.<sup>13</sup> In this test, most of

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<sup>11</sup> September 5, 2000 electronic mail from Julie Brunner to Robert Sills.

<sup>12</sup> A Post-it note was found appended to one of the mercury calculations with the notation “EF - taken from a study of wt % TSP. And source numbers from recycling council – numbers not from stack test.”

<sup>13</sup> Mercury Emissions from a Hazardous Waste Incinerator Equipped with a State-of-the-Art Wet Scrubber, JAWMA 45: 730-736, September, 1995

the mercury introduced into the incinerator would have been converted into ionic mercury compounds which are water soluble. This same paper also referred to a prior EPA guidance document showing typical mercury collection efficiencies of 50-60%.<sup>14</sup>

In EPA's Mercury Study Report to Congress, EPA found:

“Soluble species of mercury compounds, such as HgCl<sub>2</sub> and mercuric oxide (HgO) can be effectively captured (greater than 90 percent) in the wet scrubber. **If there is significant elemental mercury in the flue gas, however, collection efficiencies will be limited.**”<sup>15</sup> (Emphasis added)

In the present case of S & S Metal Processing, almost all of the entrained mercury in the process gas that is collected will likely be elemental mercury in either liquid aerosol or gaseous forms as the metal shredder is unlikely to raise mercury introduced into the process to a sufficient temperature for a significant length of time to allow mercuric oxide to form. In addition, there will likely be a very low concentration of elemental carbon particles available in the process offgas stream to allow adsorption of mercury onto such particles and subsequent collection in the PM control equipment. It is entirely possible that the proposed air pollution control system will have practically no control efficiency for mercury.

#### **3.12.4 Consistent with the Commentors Adverse Comments Above Concerning MDEQ-AQD's Overestimation of Mercury Control Efficiency, Underestimation of Mercury Shredder Feed Inputs and Disregard for Shredder Fugitive Mercury Emissions, Commentors Describe Scenarios Potentially Involving High Mercury Emissions From the Proposed Facility**

As noted in prior sections, MDEQ has underestimate process mercury feed inputs, overestimated emission control train performance of mercury-containing process gases and disregarded fugitive shredder mercury emissions. In this section commentors continue to assume that 100% of the mercury is partitioned to shredder offgas as elemental mercury aerosols or vapor, an assumption also taken by MDEQ-AQD.

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<sup>14</sup> Guidance on Metals and Hydrogen Chloride Controls for Hazardous Waste Incinerators,” Vol IV of the EPA Hazardous Waste Incineration Guidance Series, August 1989

<sup>15</sup> Mercury Study Report to Congress, Volume VIII; An Evaluation of Mercury Control Technologies and Costs, December 1997, EPA Office of Air Quality Planning and Standards and Office of Research and Development, Section 2.2.2.2, Page 2-23; available on WWW at <http://www.epa.gov/ttn/uatw/112nmerc/volume8.pdf>

In the chart below, Commentors show a variety of scenarios involving both shredder process mercury inputs, differing assumptions on the proportion of shredder process gases that escape the shredder hood uncontrolled and differing assumptions of mercury control efficiency of the air pollution control system.

As can be seen from the table, some scenarios would indicate very significant mercury emissions from the proposed facility. The most adverse scenario analyzed would indicate almost 400 pounds of mercury emissions per year.

While MDEQ-AQD has considered that the prior estimated emissions of 5-7 lbs of mercury would not require a non-inhalation risk assessment, the table indicates that this facility's mercury emissions under even modest estimation assumptions could be dramatically higher. The health and environmental impacts of the proposed facility under these emission scenarios have not been evaluated.

### Mercury Emission Scenarios – S & S Metal Shredder

All scenarios assume 1 g of Hg per switch and 100% of Hg entrained in shredder process offgas

Assumption Scenario	Hg Process Input (lbs/hr)	Hours of Operation	Factor for Fugitive Hg Hood Emission	Scrubber + Cyclone Overall Collection Efficiency Factor	Annual Hg Stack Emissions (lbs)	Annual Hg Shredder Fugitive Emission	Total Annual Hg Emission (lbs)
1	0.047	2080	0.00	0.95	4.9	0.0	4.9
1	0.047	3120	0.00	0.95	7.3	0.0	7.3
2	0.11	2080	0.00	0.95	11.4	0.0	11.4
2	0.11	3120	0.00	0.95	17.2	0.0	17.2
1	0.047	2080	0.05	0.95	4.6	4.9	9.5
1	0.047	3120	0.05	0.95	7.0	7.3	14.3
2	0.11	2080	0.05	0.95	10.9	11.4	22.3
2	0.11	3120	0.05	0.95	16.3	17.2	33.5
1	0.047	2080	0.10	0.95	4.4	9.8	14.2
1	0.047	3120	0.10	0.95	6.6	14.7	21.3
2	0.11	2080	0.10	0.95	10.3	22.9	33.2
2	0.11	3120	0.10	0.95	15.4	34.3	49.8
1	0.047	2080	0.05	0.5	46.4	4.9	51.3
1	0.047	3120	0.05	0.5	69.7	7.3	77.0
2	0.11	2080	0.05	0.5	108.7	11.4	120.1
2	0.11	3120	0.05	0.5	163.0	17.2	180.2
1	0.047	2080	0.10	0.5	44.0	9.8	53.8
1	0.047	3120	0.10	0.5	66.0	14.7	80.7
2	0.11	2080	0.10	0.5	103.0	22.9	125.8
2	0.11	3120	0.10	0.5	154.4	34.3	188.8
3	0.165	2080	0.10	0.95	15.4	34.3	49.8
3	0.165	3120	0.10	0.95	23.2	51.5	74.6
3	0.165	2080	0.10	0.5	154.4	34.3	188.8
3	0.165	3120	0.10	0.5	231.7	51.5	283.1
3	0.165	2080	0.10	0.25	231.7	34.3	266.0
3	0.165	3120	0.10	0.25	347.5	51.5	399.0
3	0.165	2080	0.10	0.25	231.7	34.3	266.0
3	0.165	3120	0.10	0.25	347.5	51.5	399.0

Assumptions 1 MDEQ AQD Base Case, 43 switches/100 vehicles  
 2 100 switches per 100 vehicles  
 3 150 switches per 100 vehicles

### **3.12.5 MDEQ-AQD's Physical Theory Assumption that Process Inputs of Mercury to the Shredder Partition on a 100% Basis to Shredder Process Offgas is Not Realistic**

MDEQ-AQD's calculations assume that 100% of the mercury introduced into the metal shredder process partitions to shredder offgas that is collected and controlled by the air pollution control system. This is an unrealistic assumption which is likely to create large errors in estimation of the total overall mercury emissions from the facility from both stack and fugitive sources.

A more probable physical scenario for the partitioning of mercury inputs to a metal shredder system is that a portion of the mercury goes to the process offgas, some is deposited on the shredded metal output, some is deposited in any sump under the shredder for collecting oil and the remainder is deposited into non-metal auto shredder residue waste streams. As noted above, the temperature and residence time within the shredder is not likely to be sufficiently long to drive all of the mercury to volatile gas form. There will likely be significant mercury aerosols and these will be deposited on the surface of shredded metal and non-metal auto shredder residue.

An EPA presentation by Alexis Cain found in the MDEQ-AQD file on S & S Metal Shredders mentions a mass balance study at an integrated auto shredding and electric arc furnace facility. It notes a measured mercury emission of 11 pounds per year from the shredding operation and measured mercury in auto shredder fluff of 77 pounds per year. That there is significant retention of mercury in auto shredder fluff indicates that the MDEQ-AQD assumption about 100% partitioning of auto shredder mercury inputs to collected shredder process offgas is an unrealistic physical assumption on the disposition of mercury in the S & S process.

MDEQ-AQD must confront the fact of uncontrolled fugitive mercury emissions evaporating from piles of both shredded metal and auto shredder fluff, as well as stack emission, mercury contamination of oil sumps and subsequent emissions if this waste oil is burned, fugitive shredder emissions around control hoods and other potential sources. For example, mercury present on shredded metal may be vaporized in "Z-Box" air classification systems to separate remaining fluff materials from shredded metal.

MDEQ-AQD failure to properly confront the potential multiplicity of mercury emission sources and the multimedia aspect of this problem at this proposed auto shredder facility would constitute an abdication of the agency's responsibilities to determine the impact of its proposed decision on pollution, impairment and destruction of the environment.

**3.12.6 The Proposed Permit Conditions Will Not Adequately Regulate Mercury Pre-Processing of Waste Materials Received for Shredding**

Given the high potential of the proposed facility to emit large amounts of mercury in stack and fugitive emissions if it is not removed in pre-processing, more care and attention must be paid in the permit conditions to pre-processing requirements.

Condition #12 and #18 affect the issue of mercury pre-processing. However, Condition #12 should be broadened to include all mercury-containing devices that can be expected to be found in both vehicles and in whitegoods. Presently, the provision only affects vehicles and will likely be read to exclude non-switch mercury devices. It will certainly be read to exclude mercury device removal from white goods (for example, mercury may be found in certain heat transfer applications, such as in oven temperature sensors.).

Condition #18 references “hazardous materials,” but this might leave open the possible interpretation that a particular waste stream might be excluded because it is not a listed hazardous waste or because it is deemed a non-waste recovered material for recycling. Condition #18 should be explicitly written to indicate each and every waste type, including mercury from metals to be shredded, that must be included in the recordkeeping function concerning collection, storage and disposal. In addition, as mentioned elsewhere, this recordkeeping should be incorporated into a quarter reporting requirement to ensure that there is no possibility of evading the pre-processing requirements.