

Green Industry? Under the Radar: AIR POLLUTION FROM METAL RECYCLERS

Global Community Monitor
August 2010





Global Community Monitor, founded in 2001, trains and supports communities in the use of environmental monitoring tools to understand the impact of fossil fuel industry pollution on their health and the environment. GCM's work focuses on disempowered "fenceline" communities harmed by serious air pollution from industrial sources and whose concerns agencies and responsible corporations are ignoring.

Over the past dozen years, GCM, a project of the Tides Center, has developed and pioneered the use of "bucket brigades" (a grassroots air monitoring program) as a method for communities to document and understand the impacts of industrial pollution, to launch advocacy efforts to reduce emissions, and to win stunning victories.

GCM's primary activity consists of providing training and ongoing technical assistance to fenceline neighbors fighting for clean air and healthy communities as well as strengthening an international movement of people fighting industrial pollution and climate change. GCM has worked with 40 communities in 27 countries

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UNDER THE RADAR: AIR POLLUTION FROM METAL RECYCLERS

Metal Recycling: Scrappers, Balers, and Foundries

Scrap metal recyclers, or scrappers, are facilities that take metal scrap (from consumers directly or delivered from collection facilities) and recycle this scrap by processing it back into usable metal. Facilities may take part in either or both parts of the processing process. Facilities may be balers, undertaking the mechanical separation and reconstitution of the scrap, foundries, which actually melt down the metal and reform it using high heat, or both.¹ Air pollution from these operations is largely unregulated.

LUCRATIVE

Though metal prices had primarily remained constant for decades, since July of 2002 the cost of metal, particularly non-ferrous metal, has steadily and strongly been on the rise. As a result, scrap metal recycling has suddenly become a lucrative business and it is booming. In the years between 2005 and 2007, the number of scrap metal recycling businesses has grown by nearly 20%.²

PAINTED AS GREEN

Scrap-metal recycling is certainly a green business in some very important ways. Recycling aluminum, for example, saves 95% of the energy costs of processing new aluminum.³ However, this green façade has thus far allowed the industry to escape important environmental regulation. While recycling can be good for the environment as a whole, recycling in an unregulated and dirty manner can be extremely harmful to the local environment and to public health.

WHAT THESE PLANTS ARE RELEASING

Sampling Case Studies

Global Community Monitor (GCM), along with local neighborhood partners, has undertaken preliminary fence-line sampling at two scrappers in the San Francisco Bay Area. GCM has confirmed the presence of various heavy metals, including arsenic and cadmium, in the air near Custom Alloy Scrap Sales, a West Oakland scrapper.⁴

Also, samples detected Freon and toxic gases associated with waste oil near the facility.⁵ In Berkeley, downwind of Pacific Steel Casting, air samples showed high levels of the toxic heavy metals manganese and nickel.⁶

Fugitive and Uncontrolled

From these case studies, and from reports by fence-line communities all around the Bay, we can extrapolate that a great deal of fugitive and uncontrolled emissions are occurring at scrap metal recycling plants. Many different steps in the current process of scrapping can be sources of these toxins.

1) Preprocessing: Many of these scrap recycling sites, even the smallest of them, preprocess the metal scrap prior to the actual melting down of the metal in foundries. This preprocessing aspect of metal recycling may be in fact the most dirty and also the most challenging to regulate. Preprocessing essentially involves various means of taking large chunks of scrap – refrigerators, engine blocks, air conditioners – and combining them all into compact, transportable, and process-able chunks.

These means can include cutting of the scrap with welding torches, compacting the scrap mechanically, using heat or solvents to remove non-metal portions of the scrap, and even larger-scale baling of the metal parts.⁷ During this preprocessing, the heat and mechanical cutting and tearing can both kick metal particles and other contaminants, including volatile organics and dangerous gases, into the air. These emissions are by their nature fugitive, as they are an unintended byproduct of the current practices.⁸ They currently escape comprehensive regulation.⁹



Above: In some businesses, the mechanical preprocessing, such as in this instance of a worker with a welding torch, happens in a scrapyard in the open air.

2) Processing: Once the metals are isolated and compacted, the metal is then melted into ingots for transport and sale inside large industrial foundries. These foundries are located only in the larger metal recycling plants, and can be identified by telltale smokestacks and piles of slag. The foundry process is also quite dirty, as heating the metal results in contaminants entering the air through the smokestacks.¹⁰ Also, any impurities that remain, such as some paint or engine oil residue, are heated to high temperatures and released into the air as well. During routine operations, these toxic fugitive emissions can escape from scrappers, entering the air, flowing into fenceline communities, and can enter the lungs of neighboring residents-including small children, pregnant women, elderly and people with already compromised immune systems.

Every single day, these toxic fugitive emissions can escape from scrappers, flow into fenceline communities, and enter the lungs of residents.

WHAT DO THESE SUBSTANCES DO?

THREAT TO PUBLIC HEALTH

At the various stages of processing in a scrap metal recycler, numerous substances may become released into the air. These substances can become airborne through heating or mechanical cutting. If uncontrolled, the now airborne pollution can drift across the facility's fences and into communities. At this point, residents of communities may become exposed to the pollutants, and may breathe the substances into their lungs. Each type of substance that may become released through the scrap metal recycling process can have a different impact on an exposed individual's health:

Heavy Metals¹¹

- Extremely toxic
- Never leave the body
- Can cause cancer, nervous system and brain damage, lung diseases, premature death

Volatile Organics¹³

- Can arise from paints and coatings, cleaning products, and fossil fuels
- Can have short term or acute health effects
- Can cause cancer, reproductive problems, skin rashes, nervous system damage

Particulate Pollution¹²

- Can cause harmful effects on respiration, including asthma, lung cancer, heart disease, premature death
- Harmful effects felt even if substances are not themselves toxic
- Smaller particles are more damaging to the human body

Cumulative effects¹⁴

- Though we do not know much on every toxin that is in the industry, we know even less about the cumulative impact of all these toxins as they are brought together in the human body.

DESTROYING THE ATMOSPHERE

In addition to harming the health of individuals, certain substances that can become released by scrap metal recycling can degrade the environment as well. For example, substances such as Freon have been documented in an air sample taken in West Oakland. Freon is banned in America, but still exists in old air conditioners.¹⁵ When these air conditioners are scrapped without regard for their dangerous contents, Freon can escape into the atmosphere. This Freon enters our atmosphere and joins the Freon that has unfortunately already been released in years past, cumulatively weakening the ozone layer in our atmosphere and increasing the amount of solar radiation that hits the Earth's surface.¹⁶

AIR POLLUTION IS NOT CONTROLLED

Currently, this potential air pollution from scrappers that may harm human health and damage the environment, is left completely unregulated. The agencies that regulate certain aspects of scrap metal recycling, such as waste-water runoff and offsite removal of toxic substances, do not regulate the fugitive emissions that can escape into the air of surrounding communities.¹⁷ Existing in a gray area between the jurisdictions of the following agencies, scrap metal recyclers have thus far flown under the radar of regulation.

- **Department of Resources Recycling and Recovery (CalRecycle)**

This is a new department within the California Natural Resources Agency that is designed to promote recycling and waste reduction.¹⁸ The department does not regulate any aspect of scrap metal recycling other than directly relating to solid waste disposal or processing activity. Any cleaning of the separated scrap prior to melting is out of CalRecycle's direct oversight.¹⁹

- **Department of Toxic Substances Control (DTSC)**

This department is charged with providing the highest level of safety and protecting public health and the environment from toxic harm.²⁰ However, this department is limited to toxic substances specifically, and does not regulate air quality.²¹

- **Regional Water Board (San Francisco Bay Region 2)**

The Regional Water board is charged with regulation concerning waste water runoff from all industrial facilities. Many scrap metal recyclers are given Water Discharge Identification Numbers (WDID), and runoff is indeed regulated.²² However, the fugitive air emissions are a different story.

- **Local Air District (BAAQMD)**

Up until now, the Bay Area Air Quality Management District has not specifically regulated scrap metal recyclers. Due to community uproar and fence-line air monitoring data, the BAAQMD is currently drafting a new rule to fill this regulatory loophole.²³

HOTSPOTS IN THE S.F. BAY AREA

The San Francisco Bay Area itself has a great deal of scrap metal recyclers, some large and some small, all lacking in comprehensive air regulation. Many of these recyclers can be found grouped in a handful of hotspots around the East and South Bay – hotspots that are primarily bordered by minority and low income neighborhoods

WEST OAKLAND

Sitting on the northwestern corner of Oakland along the waterfront, West Oakland has become a primarily African American neighborhood (over 65%), with a small Hispanic population. Isolated by a series of highways, much of West Oakland's housing is interspersed with industry, homes, schools, and parks even located nearby metal scrappers.²⁴

880 CORRIDOR (EAST OAKLAND, SAN LEANDRO)

Comprised of many different and varied neighborhoods, the entire 880 Corridor is defined by Interstate 880, running from the MacArthur Maze all the way down to San Jose. Along the route, many industrial areas are located between the highway and the Bay, with the inland portion of the corridor, east of the highway, remaining primarily residential. With the wind blowing generally in off the bay, any pollution generated in these industrial sites tends to make its way to the residential districts. Some of these districts, particularly those near scrappers are characterized by poorer minority neighborhoods. East Oakland, for example, is primarily African American, and has been plagued by crime in the entire postwar period following the exodus of more prosperous whites. San Leandro is a generally varied city, demographically. However, much of its 20% Hispanic population lives in the area closer to the industrial sites.²⁵

WEST BERKELEY

With one of the highest population densities (9,823.3 people per square mile) in California, pollutants released in Berkeley hit a great number of people. West Berkeley contains the remnants of Berkeley's industrial area, and is the site of the large scrap steel foundry. This area was once the unincorporated town of Ocean View and is now comprised of many of the low income or working-class residents of Berkeley.²⁶

SAN JOSE

San Jose is the tenth largest city in the United States, and is nearly one third Hispanic or Latino. Two primary centers of scrapping are both located south of the city, far from the prosperous Silicon Valley and more affluent neighborhoods. While these scrapping centers are in primarily industrial areas, these industrial zones are just a narrow road away from working-class neighborhoods.²⁷

See the bay area map on the following page to see the locations of the scrappers within these hotspots.



ENVIRONMENTAL JUSTICE

Polluting recycling plants operating right next to poor minority families is a continuation of a theme of environmental injustice. The fact is, there are plenty of reasons to concentrate pollution near the poor and communities of color. The land there may already house industry, may already be polluted, may already be zoned correctly, or may be very cheap. Land near wealthier neighborhoods may be protected by law, the residents may have a political voice, and the land may be prohibitively expensive. In the end, more and more polluters locate near poor minority neighborhoods, increasing the cumulative pollution that families in these neighborhoods are exposed to. This unequal distribution of pollution is unjust and must be stopped.

LIST OF POSSIBLE SCRAP METAL RECYCLING FACILITIES IN THE BAY AREA²⁹

San Leandro

Western Strategic Materials
DC metals
Alameda County Industries
Alco Iron & Metal Co.
American Metal & Iron/Standard
Iron & Metal

Hayward

Fry's Metals
Container Recycling Alliance

Livermore

Nica Metals

Oakland

Custom Alloy and Scrap Sales
Alliance Metals
CA Waste Solutions
CA Waste Solutions
Standard Iron & Metals Co
Miller Dismantler
Schnitzer Steel Prod
Jefferson Smurfit Corp.
Lakeside Non-Ferrous Metals
American Metal & Iron/Aaron
Metals

Richmond

Simsmetal America
Ren Metal Salvage and Recycling
Richmond Junk and Wrecking
Action Metal Recycling

Berkeley

Pacific Steel Casting

San Jose

Tai Tung Group
Simsmetal America
Charron Metals Corp.
Recycled Fibers
Xstrata Recycling Inc
Valley Recycling Inc.
Smurfit Stone Container
Premier Recycle
Recycling Specialists Inc
Green Team San Jose Materials
West Valley Collect and Recycling
Tomra Recycling Network
American Metal & Iron/Pleasant
Hill Recycling Center
American Metal & Iron
O'Neil HVAC Recycling
California Waste Solutions
AMI Recycling Inc.
Sims Metal Management
ASC Recycling
ECS Refining
Danny's Recycling Center
Recycling Services Silicon Valley
Metals West
J & B Enterprises

Redwood City

Simsmetal Redwood City

San Francisco

Ace Computer and Scrap/Ace Car
Dismantlers
Circosta Iron and Metal Co.

Who This is Affecting: PROFILE

Wafaa Aborashed

Director, Healthy San Leandro Environmental Collaborative

BECOMING AN ORGANIZER

I arrived in America in 1964, immigrating with my parents from Jordan. My family first settled in Alameda, and my father opened a flight school at the Oakland Airport. He owned and operated this school until his death, for a total of 36 years. All six of us, myself and my siblings, learned to fly from a young age. From being around the flight school, I was always familiar with the more industrial parts of 880 Corridor. I was at and around the airport a great deal. For parts and other orders, I would often go to the warehouses and factories in San Leandro, and quickly became familiar with the area.

Since my first years in in the Bay Area, I had always been involved in volunteer work. While attending UC Berkeley, I was primarily concerned with youth issues. I first became involved in environment-type issues when the airport announced plans for expansion. My brother and I were at this point both living in San Leandro. We and others in the Davis West neighborhood were primarily concerned with noise issues from the planned increase in flights. We lobbied the city to sue for a decreased impact on the community, such as a decreased impact on schools.

My initial introduction to environmental justice came soon after. Alameda County was at that point planning on building a power plant in San Leandro. As I became involved in the issues surrounding this plant, I realized that San Leandro was endangered by far more than simply noise pollution. Those factories and foundries that I had seen in the



industrial area growing up, those factories and foundries that were now right across the train tracks from my backyard, were doing more than making sounds. They were also dumping toxins into our air.

PROTECTING THE 880 CORRIDOR

As I became more aware of the individual polluters, I began to realize the huge danger posed by all these polluters collectively. They were all grouped in a small dense area, surrounded by the highway, and visited constantly by diesel trucks and heavy trains. Altogether, this was a lot of toxins in the air at once. I now understood how serious and dangerous the cumulative effects of this pollution could be.

In my work organizing to protect the 880 Corridor residents and to reduce the amount of pollution building up in our air, I came to also realize how frozen and unresponsive our government could be. Elected officials often were heavily influenced by the very industries we were fighting. Regulatory agencies were also not always able to help, giving permits where pollution was already occurring.

THE RESIDENTS AT RISK

Since I have lived in the Davis West neighborhood, I had noticed over time that a great deal of my neighbors had been getting sick and dying. First

asthma, then cancer. I was more and more worried about what was causing these sicknesses. Through working on pollution issues, I began to understand the direct link between the smells and smoke coming out of the industrial areas and the health of our residents. I made it my crusade to reduce the cumulative air pollution in any way that I can. Whether it is the airport traffic, idling trucks, or dirty recycling, we cannot tolerate these toxins in our local air.

METAL SCRAPPERS

The metal scrappers might sound good because they are recycling, but when you live right near them and see them firsthand, they are indistinguishable from any other heavy industry. Driving by on Doolittle or on Davis, you can see the workers cutting apart metal with welding torches. You can see heavy crane arms smashing refrigerators to move them from huge piles of metal into more compact containers. The sounds and sights are industrial, and so are the smells. The metal sparks fly into the air, and you can smell a burning odor. I am especially concerned about paint getting vaporized or thrown into the air. I am concerned about the non-metal fluids in the appliances and engines being cut. Also, what happens to all those sparks that get picked up by the wind? That metal goes right into our lungs.

AIR DISTRICT RULE

I want the government first and foremost to take monitoring in our fence-line neighborhoods seriously, to look at what we are dealing with. Where is our advocate for good air and good health? Where is our advocate at the Alameda County Health Department, or at the Air District level?

Of course I am excited to hear that the metal scrapping facilities are finally to be regulated by the air district. I hope that the final rule sets firm guidelines for how the scrappers operate. No more sparks of metal into the open air. No

more cutting directly onto painted metal or into un-cleaned engine blocks. I want the rule to not only cover the final melting of the metal, but also the entire process of cutting and baling the scrap.

My biggest concern with this rule, and with other well-meaning rules in general, is that enforcement may be an issue. These metal recyclers mostly operate behind a facade. We can't see it, if they are not following the rules. Many of the particles and toxins that are making us sick have no odor and cannot be seen. Somehow the Air District must make sure their rule is followed. The Air District Rule must address this.³⁰



Above: Wafaa points to her house and the Davis West neighborhood, while she stands near the train tracks separating her house from the industrial area containing scrappers.

FORTHCOMING BAAQMD SCRAP RECYCLER RULE

Largely due to the data gathered through fenceline monitoring, the Bay Area Air Quality Management District (BAAQMD), has undertaken the drafting of an air district rule aimed at finally regulating the Bay Area's scrappers.³¹ Such a rule is long overdue and regulation is needed to protect public health. The difficulties of creating effective regulations, where no prior regulation has existed creates some challenges. On one side, previously unregulated industries may fight tooth and nail to oppose comprehensive regulations. The BAAQMD is soon releasing the first draft of their new scrapper rule, and it is important that any flaws or omissions be caught at this early stage.

Based on preliminary discussions with the BAAQMD staff, we are concerned with a handful of particular aspects of the forthcoming regulation

1) **What is covered by the rule?** The BAAQMD regulates traditional pollution sources, such as the intended pollution of smokestacks generating the byproducts of industrial production. What is far more difficult is regulating fugitive emissions – the unintended release of chemicals and toxins into the air from non-smokestack sources.

These fugitive emissions comprise a large part of the scrapper problem. Whenever an engine block is cut or a refrigerator compacted, whenever paint is scraped or oil leaked, air pollution is generated from the basic mechanical process of scrapping. We are confident that the BAAQMD has the ability to successfully regulate smokestack pollution from scrappers, such as the releases from the melting down of scrap metal into ingots. However, it is these fugitive emissions from scrappers that most desperately need to be regulated. It is our hope that the new scrapper rule successfully addresses this issue.

2) **Who is covered by the rule?** Since aspects of scrap metal recycling have been previously unregulated from the air district's point of view, there is currently no form of registry of these scrappers. There exists no master list of scrappers that are in need of regulation. There is no agency that has a master list of recyclers and scrappers. For the new metal scrapper rule to be effective, the BAAQMD must be sure to identify and define what facilities are covered.

The specific definitions used by the BAAQMD can be very important to how far-reaching and useful the new rule will be. What size factories are covered? Are only scrappers with foundries covered, or bailers as well? Are all kinds of metal recycling covered? These are the sort of questions that will determine whether the rule is broad enough to be effective, or too narrowly tailored to protect public health.

3) **Public Engagement and Environmental Justice.** Following the release of the first draft of the rule, the BAAQMD is required to allow public comment. It is during this period that stakeholders, such as the public at large, are given the opportunity to allow their concerns to be heard. The BAAQMD would then, hopefully, take these concerns into consideration for the final version of the regulation.

In practice, however, this public comment period does not always go so smoothly. While the industry, fearful of being finally reigned in, will do its best to get its concerns addressed, the public does not often get its collective voice heard as loudly. This is because the people effected, the very fenceline community members breathing in the poison generated by scrappers, are already busy enough with their day-to-day responsibilities.

While the industries pay individuals to lobby the air district, community members can only get their voices heard by taking time out of their already busy lives. Of course, we are confident that the importance of this rule will urge community members to take just such a stand, it is important that the public comment process be open and accessible to neighbors and not pose another barrier to community involvement. Therefore workshops on the draft rule should be held in the evenings in communities impacted by scrap metal facilities.

It is our concern that the final public hearings held by the BAAQMD will, as per usual practice, be held in San Francisco at regular business hours. If this is the case, the forum will be placed far from the affected communities, and held while members of these communities are unable to attend. Such barriers could serve to stifle the voices of the public and allow an imperfect regulation proceed without adequate comment. We hope that this will not be the case.

COMPONENTS OF AN EFFECTIVE SCRAPPER RULE

For a the metal foundry and scrapper rule to be truly effective at protecting public health, it must include the following points:

Fugitive Emission Controls

An effective rule must completely control all emissions from a scrap yard and foundry, both from the mechanical cutting and baling of the scrap and any melting of metal that occurs on site.

Certain precautions should be mandated, such as:

- fully enclosing all scrapping activities indoors
- maintaining a negative pressure in the indoor facility to avoid pollution escaping
- the use of two tiered ingress/egress, akin to an airlock

Controls must be comprehensive, to make sure that all emissions are prevented or well controlled. The rule must specifically cover VOC's and other gases, particulate emissions (metals, etc), and other chemicals released from the facility's operations.

Exceptions

To ensure that the key controls of the rule be as far-reaching as possible, reasonable exceptions to the rule should be granted that allow exclusion from the necessary broad controls. One example of a reasonable exception would be in the case of small-quantity recycling facilities like the aluminum can crushers found in certain supermarkets. In such an instance, a minimum metal volume figure could be written into the rule.

Administration & Enforcement

In order for a rule to be effective, it must adequately provide for administration of its controls. Such a rule must be administered in three key areas:

1. A Compliance Schedule must be provided, in order to ensure that the rule is being implemented as quickly as possible to protect public health.
2. Air Monitoring must be built in, specifically at the fence-lines of facilities, to not only ensure that emissions are not making their way off-site, but also to allow any escaped emissions to be traced back to their source.
3. Record Keeping must be kept of how facilities are complying with the rule to ensure that compliance is transparent and verifiable by the public.

Enforcement of the regulation and rapid response to complaints from the public are the keys to an effective rule.

WHAT YOU CAN DO

1) Contact the Air District directly to let them know what you think should be put in the rule.

- Lead Staffer on the Scrap Rule:
Victor Douglas, Principle Air Quality Specialist, Planning and Research
Tel: (415) 749-4752 | E-mail: vdouglas@baaqmd.gov
- Members of the BAAQMD Board of Directors who represent residents near scrappers
Berkeley
Mayor **Tom Bates**, City of Berkeley (Vice Chair of BAAQMD Board of Directors)
Tel: (510) 981-7100 | E-mail: mayor@cityofberkeley.info

San Jose
Council Member **Ash Kalra**, City of San Jose
Tel: (408) 535-4902 | E-mail: district2@sanjoseca.gov

Oakland / 880 Corridor
Supervisor **Nate Miley**, Alameda County
Tel: (510) 272-6694 | E-mail available at robyn.hodges@acgov.org

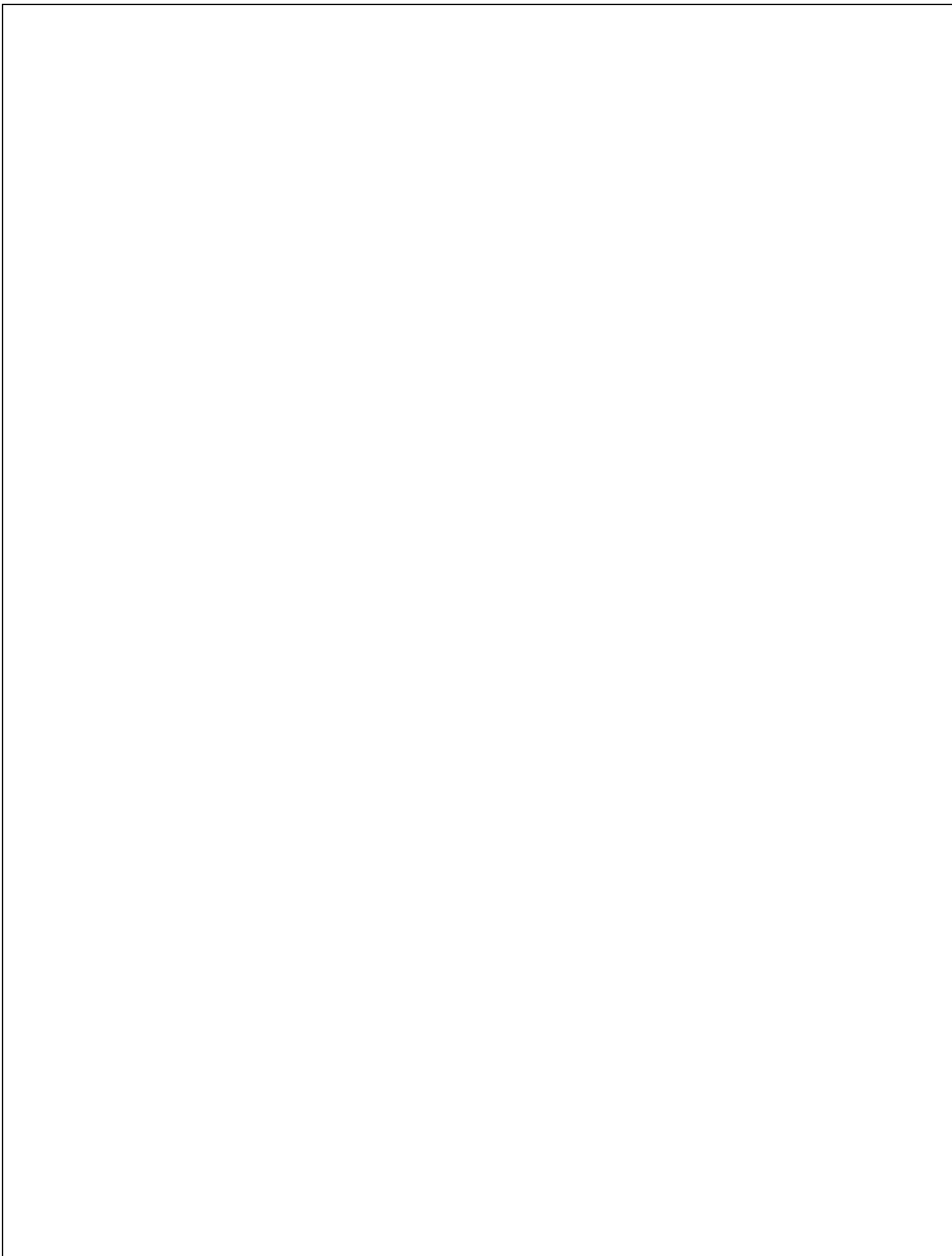
Richmond
Supervisor **John Gioia**, Contra Costa County
Tel: (510) 374-3231 | E-mail: dist1@bos.cccounty.us

2) Take an active part in the Air District's rule development.

- Attend workshops, to be announced following the release of the initial draft of the rule.
- Lobby the BAAQMD to hold workshops at times and places convenient to you and your community.
- Learn as much as you can about the ability of the rule to address your concerns.
- Contact Global Community Monitor to stay informed and get updates at info@gcmonitor.org or (510) 233-1870

3) File your official comment during the public comment period.

- Let the BAAQMD know about any concerns that remain after your personal review of the rule draft. Your comments help make sure that the affected communities play a role in shaping the final draft of the rule.



ENDNOTES

- ¹ Wikipedia: <http://en.wikipedia.org/wiki/Baler>
- ² Ann Farmer, "In the Metal Recycling Business, It's Loud, Dirty, and Suddenly Lucrative," New York Times, June 27, 2008. Available at <http://www.nytimes.com/2008/06/27/nyregion/27scrap.html>
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- ⁴ West Oakland Monitoring Project, Global Community Monitor. Preliminary results available at <http://www.gcmonitor.org/article.php?id=742>
- ⁵ West Oakland Monitoring Project, Global Community Monitor. Preliminary results available at <http://www.gcmonitor.org/article.php?id=742>
- ⁶ West Berkeley Community Monitoring Project, Global Community Monitor. Results available at <http://www.gcmonitor.org/article.php?id=702>
- ⁷ Information based on observations of scrap metal neighbors and Global Community Monitor, including photographs.
- ⁸ "Fugitive Emissions" as defined by the United States Environmental Protection Agency. Available at <http://www.epa.gov/OCEPATERMS/>
- ⁹ Global Community Monitor analysis of current Bay Area Air Quality Management District regulations
- ¹⁰ National Emission Standards for Hazardous Air Pollutants, United States Environmental Protection Agency. Available at <http://www.epa.gov/ttn/atw/area/foundriesb.pdf>
- ¹¹ Agency for Toxic Substances and Disease Registry, Toxicological Profiles. Available at <http://www.atsdr.cdc.gov/toxprofiles/index.asp>
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- ¹⁴ Xia Y., Tong H., "Cumulative effects of air pollution on public health." Statistics in Medicine, Volume 25, Issue 20, pages 3548-3559, 30 October 2006. Abstract available at <http://www.ncbi.nlm.nih.gov/pubmed/16345021>
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- ¹⁶ Office of Pollution Prevention and Toxics, "Chemicals in the Environment: Freon 113." United States Environmental Protection Agency, August 1994. Available at http://www.epa.gov/chemfact/f_freon.txt
- ¹⁷ E-mail correspondence from David Otsubo, Supervising Integrated Waste Management Specialist, CalRecycle, on July 13th, 2010 to Global Community Monitor
- ¹⁸ Department of Recycling, Resources, and Recovery (CalRecycle) website. Available at <http://www.calrecycle.ca.gov/>

¹⁹ E-mail correspondence from David Otsubo, Supervising Integrated Waste Management Specialist, CalRecycle, on July 13th, 2010 to Global Community Monitor

²⁰ Department of Toxic Substances Control website. Available at <http://www.dtsc.ca.gov/>

²¹ E-mail correspondence from David Otsubo, Supervising Integrated Waste Management Specialist, CalRecycle, on July 13th, 2010 to Global Community Monitor

²² State Water Resources Control Board website. Available at: <http://www.swrcb.ca.gov/>

²³ Communications from Global Community Monitor to Bay Area Air Quality Management District staff

²⁴ West Oakland Demographic Profile by Margot Prado AICP City of Oakland

²⁵ Wikipedia: http://en.wikipedia.org/wiki/East_Oakland,_Oakland,_California,
http://en.wikipedia.org/wiki/San_Leandro

²⁶ City-Data.com: www.city-data.com/zip/94710.html

²⁷ Wikipedia: http://en.wikipedia.org/wiki/San_Jose,_California

²⁸ Map of scrap metal recycler locations compiled by noting the researched locations of scrap metal recyclers onto a Google Map. Map ©2010 Google.

²⁹ This list was compiled through research by the GCM staff. In this research, Water Discharge Identification Numbers, internet searches, google maps business searches, and google satellite visual identification of scrappers were some of the methods used to identify scrap metal recyclers. This list is by no means official or exhaustive. It is important that the BAAQMD work towards compiling an accurate and official list of scrap metal recyclers that would be subject to regulation.) Google Maps displayed business listings are supplied by Acxiom Corporation and/or infoUSA Inc. This information is proprietary to these corporations and is protected under U.S. Copyright law and international treaty provisions.

³⁰ Interview with Wafaa Aborashed, conducted on June 25th, 2010.

³¹ Communications from Global Community Monitor to Bay Area Air Quality Management District staff

This report was made possible through the generous funding of:

As You Sow Foundation
Ben and Jerry's Foundation
The Firedoll Foundation
The Clarence E. Heller Charitable Foundation
San Francisco Foundation
Wallace Genetic Foundation
Women's Foundation of California
Richard and Rhoda Goldman Fund
GCM's Individual Donors

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Written by: Andrew Racle and Denny Larson
Edited by: Ruth Breech and Denny Larson

Published by:
Global Community Monitor
Project of Tides
www.gcmonitor.org
P.O. Box 1784
El Cerrito, CA 94530
(510) 233-1870
info@gcmonitor.org

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