

**STATE OF NEW MEXICO**  
**Before the**  
**ALBUQUERQUE-BERNALILLO COUNTY**  
**AIR QUALITY CONTROL BOARD**

**IN THE MATTER OF THE PETITION  
FOR A HEARING ON THE MERITS  
REGARDING AIR QUALITY PERMIT  
NO. 3131**

**AQCB No. 2014-4**

*Southwest Organizing Project [SWOP]  
By Juan Reynosa, Environmental Justice Organizer;  
Esther and Steven Abeyta, Members of SWOP, Petitioners*

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**ENVIRONMENTAL HEALTH DEPARTMENT'S  
OPPOSED MOTION FOR DISCOVERY**

**I. INTRODUCTION**

The Environmental Health Department (EHD) moves for an order allowing it to serve discovery on Petitioner Southwest Organizing Project (SWOP), as anticipated by the Revised Scheduling Order (Order) issued on November 15, 2015. The discovery concerns SWOP's "Bucket Brigade" and the collection and analysis of air quality samples in the San Jose neighborhood which, according to SWOP and its technical witnesses, show the presence of certain pollutants in the ambient air at levels which cause, with reasonable probability, harm to human health. Two of SWOP's technical witnesses, George Thurston and Dana Rowangould, cite the Bucket Brigade in support of their contention that the Honstein facility is causing "air pollution" in the San Jose census tract. Additionally, SWOP employees and members testified at

the hearing on June 30, 2015 that the Bucket Brigade demonstrates the presence of poor air quality in the San Jose neighborhood.

The Order required SWOP to provide an affidavit "with the details of SWOP's San Jose Bucket Brigade, including all related documents and communications." Order at ¶2. On November 23, 2015, SWOP submitted to EHD and filed in the record of this proceeding an affidavit from Mr. Reynosa, a SWOP employee, along with nineteen (19) attachments, providing information regarding the Bucket Brigade. Those documents are incomplete and inconsistent, and raise questions about the validity and reliability of the Bucket Brigade results. After reviewing the affidavit and attachments, EHD contacted SWOP's counsel to obtain additional information, but SWOP declined to provide it, and further stated that it opposed this motion.

EHD is entitled to examine the methodology and data of the Bucket Brigade, which SWOP and its technical witnesses cite repeatedly as evidence of air pollution in the San Jose neighborhood. Additionally, EHD requests discovery to obtain copies of certain references in the testimony of SWOP's technical witness, George Thurston, which are not available in public databases.

SWOP opposes this Motion. EHD sought Mr. Honstein's position but he has not responded as of the filing of this Motion. Thus, this Motion is opposed.

## **II. ARGUMENT**

### **A. DISCOVERY STANDARD**

The Air Board's adjudicatory procedures authorize discovery if the Hearing Officer determines that (1) the discovery will not unreasonably delay the proceeding; (2) the discovery is not unreasonably burdensome or expensive; and (3) the information to be obtained is relevant and not otherwise reasonably obtainable, may be lost, or may become unavailable.

20.11.81.14.5.J(1) NMAC. As illustrated below, EHD's request for discovery satisfies these criteria.

### **B. JUSTIFICATION FOR DISCOVERY**

#### **1. BUCKET BRIGADE**

EHD requests discovery regarding the air quality sampling conducted by the San Jose Bucket Brigade. The information is relevant because it concerns a key piece of SWOP's evidence of alleged air pollution in the San Jose neighborhood, which otherwise cannot be obtained because it is in the sole possession of SWOP.

SWOP relies heavily on the Bucket Brigade and its sampling results to allege the presence of air pollution in the San Jose neighborhood. SWOP technical witness Dana Rowangould relies on the Bucket Brigade results to support her testimony that air quality poses a risk to human health in the San Jose neighborhood. Referring to the air quality samples collected by the Bucket Brigade's "trained community members," Ms. Rowangould recites the "notable findings" regarding volatile organic compounds (VOCs) and particulate matter (PM) in the report prepared by Mark Chernaik, entitled "Ambient Air Quality in Southwest Albuquerque,

San Jose Bucket Brigade Results, January 2014." SWOP attached the Chernaik report to the Reynosa affidavit. *See* Attachment 19. Petitioner Steven Abeyta cites the Bucket Brigade sampling as evidence of chlorobenzene and PM pollution in the San Jose neighborhood. Hearing Transcript (Tr.), June 30, 2015, 61:6-17. SWOP's employee, Juan Reynosa, acknowledges that he organized, trained, and managed the Bucket Brigade, and even collected an air quality sample that contained "high levels of chlorobenzene," which he attributes directly to the Honstein facility. Reynosa Aff. at ¶8 and 9; Tr. 71:8-16. SWOP's executive director, Javier Benavidez, testifies that SWOP conducted the research and created the Chernaik report to demonstrate that air pollution is causing injury to human health with a reasonable probability. Tr. 81:20 – 82:1-15. SWOP cannot dispute that the reliability and accuracy of its Bucket Brigade samples and results are relevant and not otherwise available to EHD without discovery.

EHD has serious concerns about the validity of the Bucket Brigade training and methodology, the integrity of the samples, and the veracity and reliability of the Chernaik report. For instance, SWOP's "Breathe in New Mexico" report, which is available on SWOP's website, but which SWOP has not entered into the record of this proceeding, states that the Bucket Brigade volunteers received extensive training, maintained air quality logs, created a sampling calendar, and took twelve (12) VOC samples and six (6) PM samples over the course of a year. SouthWest Organizing Project, *Breathe in New Mexico Air Quality Report* (undated) [emphasis added by asterisks adjacent to relevant paragraphs] [hereinafter Exhibit 1]. However, SWOP failed to provide these logs or the calendar, and provided laboratory reports for only seven (7) of the VOC samples. Further, EHD has identified several potential flaws in the Bucket Brigade's

sampling protocol and QA/QC compliance, but SWOP failed to provide the basic information necessary to evaluate its methodology, such as the identity of the "trained community members" conducting the sampling, their air quality logs, the methodology for selecting sample locations and times, the sampling calendar, contemporaneous field data, QA/QC documents<sup>1</sup>, and communications with the laboratory. Finally, the laboratory reports are filled with inconsistencies. For example, the laboratory report in Attachment 13 states that it was done for SWOP's Navajo/Dine Care project, rather than the San Jose neighborhood; the laboratory report in Attachment 14 contains three chain of custody forms declaring that PM2.5 was sampled, but the laboratory says that it analyzed these samples for PM10 and environmental carbon;<sup>2</sup> the laboratory reports in Attachments 15 and 16 contain partially completed chain of custody forms;

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<sup>1</sup> As explained in more detail below, SWOP attached a "manual" for the VOC sampling that contains a link to a QA/QC document, but the link does not work. *See infra* at 12. SWOP also attached reports for PM samples measured with a MiniVol Portable Air Sampler, but did not provide the QA/QC documentation specified by the sampler manufacturer. For instance, the manufacturer states that its samplers have NIST traceability documents, but SWOP did not provide copies to EHD. The manufacturer further states that the sampler must be calibrated using a flow rate transfer standard device, and other information must be collected, including the temperature, barometric pressure, and pressure drop across the sampler's orifice element. *See* <http://www.airmetrics.com/products/minivol/calibration4.html>. However, SWOP did not provide any information regarding this calibration, the other data that must be collected or evidence of calibration of the equipment used to collect it.

<sup>2</sup> Particulate matter is abbreviated as either PM2.5 or PM10 depending on the size cutoff of the particulate being analyzed.

and the laboratory reports in Attachments 14 and 15 indicate that SWOP did not send the particulate filters to the laboratory for evaluation until weeks or months after the samples were collected. SWOP has not provided any QA/QC document that validates these irregular procedures for handling air quality samples.

The requested discovery will not cause unreasonable delay. The parties recently agreed to extend the schedule to accommodate this motion, as well as SWOP's request for more time to prepare its supplemental notice of intent to present technical testimony. Moreover, the proposed extension would delay the hearing by less than 30 days, while ensuring that the Air Board and the parties have fully aired the relevant facts regarding alleged air pollution in the San Jose neighborhood.<sup>3</sup>

The requested discovery is not unreasonably burdensome or expensive. SWOP presented the Bucket Brigade sampling results to the Air Board as evidence of air pollution in the San Jose neighborhood and compared SWOP's results to EPA standards and reference levels. SWOP cannot complain that it would be too burdensome to produce all of the available information

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<sup>3</sup> EHD had hoped to avoid any delay in the hearing schedule by agreeing to SWOP's proposal to submit this information voluntarily. SWOP proposed this approach at an in-person meeting on November 2, 2015, resulting in the Hearing Officer's adoption of paragraph 2 of the Order. After that meeting, EHD's counsel sent SWOP's counsel a list of requested information regarding the Bucket Brigade. SWOP did not object to this request until EHD contacted SWOP counsel on or about December 3, 2015, to inquire about the missing information.

regarding the Bucket Brigade (or explain why it has no such information), rather than just the portion that supports its claim. SWOP incurs no expense to provide information already within its control or in admitting that it has no such information.

EHD requests discovery of the following types of information regarding the Bucket Brigade:

- a. *Whether Petitioner SWOP's named representative, Juan Reynosa, lives or has lived in the San Jose neighborhood and the date(s) of such residence, along with the applicable address(es), and additional information regarding his qualifications to offer technical testimony on scientific and medical matters.*

Juan Reynosa is SWOP's named representative in this matter and supervisor of the San Jose Bucket Brigade. Mr. Reynosa in his affidavit testified that he organized and directed the Bucket Brigade, including training of community members, scheduling the date, time, and location of sampling events, participating in at least one sampling event (during which he claims to have suffered an adverse health effect), and mailing the samples to the laboratory. Mr. Reynosa also directed and managed the Bucket Brigade's communications with the laboratory and Mr. Chernaik. EHD is entitled to discover whether Mr. Reynosa has a personal interest in the San Jose neighborhood which might affect the integrity of the Bucket Brigade sampling effort and whether he possesses the qualifications or personal knowledge to make statements about groundwater contamination from Superfund sites, pollution allegedly caused by zoning changes in the 1970s, and health impacts from air and water pollution.

- b. *Whether Javier Benavidez, SWOP staff member, lives or has lived in the San Jose neighborhood, and the date(s) of such residence, if any, along with the applicable address(es), and his qualifications to testify on scientific and medical matters.*

Javier Benavidez is SWOP's executive director. At the June 30, 2015 hearing, Mr. Benavidez acknowledged that SWOP established and managed the Bucket Brigade, and alluded to his personal health issues, but did not indicate whether his decision to establish the Bucket Brigade or his health problem was related to residence in the San Jose neighborhood. EHD is entitled to discover whether Mr. Benavidez has personal knowledge of the San Jose neighborhood which relates to these matters, which he may testify about at the hearing.

Also at the June 30, 2015 hearing, Mr. Benavidez offered his opinion about the Bucket Brigade results and the health impact of exposure to air pollutants. This testimony constitutes "technical evidence" under the Air Board's adjudicatory procedures, 20.11.81.7(T) NMAC, which must be filed pursuant to a notice of intent to present technical testimony, 20.11.81.14(H) NMAC. EHD requires discovery regarding Mr. Benavidez's educational and scientific credentials in order to determine whether he is qualified to offer this technical testimony. *See* 20.11.81.12(A) NMAC and Rule 11-702 NMRA. EHD also requires this information to prepare for the hearing at which Mr. Benavidez is expected to offer these opinions during the public comment period.

- c. *The identity of the "trained community members" who collected air samples for the Bucket Brigade, and the training received by each "trained community member," including the name, date, and location of the training, and provide a copy of any documents distributed as part of that training or comprising that training.*



SWOP repeatedly refers to the "trained" community members who conducted the Bucket Brigade. In his affidavit, Juan Reynosa describes "trainings" conducted in the "fall of 2012." *See* Reynosa Affidavit at ¶8. SWOP's "Breathe in New Mexico" report states that SWOP and Global Community Monitor conducted "a series of technical trainings for community members." Exhibit 1 at 3. However, SWOP refuses to identify these "trained community members" or to provide the sign-in sheets for the trainings. With respect to the trainings, SWOP provided a few generic documents,<sup>4</sup> but no specific information regarding the name, date, or location of the trainings, the identity of the persons from SWOP and Global Community Monitor who conducted the trainings, or the documents distributed and created during the trainings. This information is critical for EHD to evaluate whether the trainings addressed QA/QC and other requirements for accurate and valid air quality sampling, to identify the persons involved in collecting the missing VOC samples, and to prepare for the examination of the persons who collected the other samples.<sup>5</sup>

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<sup>4</sup> SWOP provided the following documents regarding the Bucket Brigade: (1) Attachment 2 is a list of parts for building a sampling bucket; (2) Attachment 3 is a three page text document, written by an unidentified author, describing SWOP's campaign to use Bucket Brigade sampling to build a "trail of evidence"; (3) Attachment 4 is a self-described "manual" from Global Community Monitor reciting the history and use of sampling buckets; and (4) Attachment 5 is a two-page checklist of directions for operating a particle monitor (the remainder of the document consists of directions in English and random Latin for formatting a report).

<sup>5</sup> For instance, EHD is entitled to discover information regarding the identity of, and the training received, by any unidentified persons involved in collecting air quality samples on September 18, 2013 and July 26, 2013, and the training received by the persons who collected the samples submitted to the laboratory without custody seals and in excess of sample holding times.

- d. *Identify any person, other than the "trained community members" referenced above, who was present during the collection or handling of the San Jose Bucket Brigade air samples, including his/her training to collect or handle air samples and involvement in gathering any information about air quality in the San Jose neighborhood.*

Mr. Reynosa in his affidavit acknowledges that he was present for the collection of the air sample at the Honstein facility on February 5, 2013. Reynosa Affidavit at ¶10. However, none of the custody forms – and specifically, the custody form for the February 5, 2013 sampling event - indicate that he was present for the collection of an air sample. Mr. Reynosa also admits to handling several of the air quality samples before their shipment to the laboratory. EHD is concerned that other unidentified persons may have been present during the collection or handling of air quality samples, and therefore requests a full accounting of these persons in order to evaluate discrepancies in the sampling process.

- e. *Identify each person who recorded information in an air quality log for the San Jose Bucket Brigade, and provide a copy of each log.*

SWOP submitted Attachment 17, which is a series of calendar sheets for each month from July 2012 to September 2013, with typewritten notes regarding the detection of odors on certain days. In his affidavit, Mr. Reynosa states that Attachment 17 consists of "[p]ollution logs." Reynosa Affidavit at ¶10. SWOP's "Breathe in New Mexico" report states that community members were trained to maintain air quality logs, which SWOP describes as "a narrative of the community member's day-to-day-experience." Exhibit 1 at 3. Rather than individual logs as stated by Mr. Reynosa, Attachment 17 is a summary compilation of alleged odor reports. The

author of the summary is not identified, and the entries refer to persons by their first name only or contain no name at all. The summary does not comport with the Global Community Monitor manual, which calls for community members to maintain individual "pollution incident" log sheets. EHD requests discovery to inspect the "pollution incident" reports or air quality logs maintained by each community member - rather than a summary of unattributable information compiled by an unidentified person and presented as evidence of the truth of the matter asserted - in order to evaluate SWOP's claims regarding air pollution and alleged health effects in the San Jose neighborhood. See Rule 11-1006 NMRA (a proponent may use a summary to prove the content of voluminous writings but must make the originals available for inspection and copying by other parties, and may be compelled to produce the originals in court).

*f. Identify each person who collected an air sample for the San Jose Bucket Brigade, the date, time, and location of collection, the methodology for selecting the date, time, and location of collection; and the sampling method for collection, and provide any documents describing the methodology and sampling method(s), including any calendar or map prepared in connection with the air samples, and any documents or analyses regarding the decision to discontinue VOC sampling.*

SWOP's "Breathe in New Mexico" report asserts that SWOP "outlined a roadmap of how and where to begin air sampling" and "established a calendar with community members that included benchmarks to help them schedule their sample set that would be collected over the course of a year." Exhibit 1 at 3. Despite this sampling plan, the Bucket Brigade collected samples only when they smelled an odor, *see Reynosa Affidavit at ¶9*, collected VOC samples for less than one year based on SWOP's decision that enough samples had been collected to

justify an allegation of air pollution in the San Jose neighborhood, *see* Reynosa Affidavit at ¶10, and failed to identify the person who collected the sample on two of the seven chain of custody forms, *see* Attachments 15 and 16. The "Breathe in New Mexico" report further states that the Bucket Brigade collected twelve (12) VOC samples, *see* Exhibit 1 at 3, but SWOP provided EHD with documentation for only seven (7) samples. *See* Attachments 6-12. With respect to the PM samples, SWOP provided EHD with one laboratory report prepared for SWOP's Navajo/Dine Care Project, *see* Attachment 13, and failed to provide the raw data for the remaining reports, *see* Attachments 14-16 (final page of each report). Despite the Bucket Brigade's apparent training, most of the VOC and PM samples were not submitted to the laboratory within the required holding time, and the chain of custody forms do not agree with the laboratory reports.

EHD requests discovery to obtain the road map and calendar, the identity of the person(s) who decided when and where to collect samples, the identity of the person(s) who actually collected each sample, the fate of the missing VOC samples, the identify of persons who can explain the apparent discrepancies between the chain of custody forms and laboratory reports, and the identity of the person(s) responsible for deciding to discontinue VOC sampling, the rationale for making the decision, and any communications with third persons about this decision.

- g. *Provide EPA's "Quality Control/Quality Assurances" document for the Bucket Brigade.*

SWOP provided Attachment 4, which is the Global Community Monitor manual used by the Bucket Brigade. The manual at page 19 states that "EPA also publishes a Quality Control/Quality Assurances document for Bucket Brigades which can be downloaded from [www.bucketbrigade.net](http://www.bucketbrigade.net)." However, this link does not access an EPA document, but rather (according to the Google translation) a Chinese website about the benefits of working as a nurse. EHD also searched the EPA website but could not locate any document meeting this description. EHD requests discovery to obtain a copy of the EPA QA/QC document to evaluate the Bucket Brigade's claim of compliance with the alleged QA/QC procedures.

*h. Identify each person who recorded contemporaneous field data for an air sample for the San Jose Bucket Brigade and provide a copy of the contemporaneous field data.*

SWOP submitted the laboratory reports for seven (7) VOC samples, which included the chain of custody forms. Several of these forms have a "comments" field which contain a personal note rather than data on field conditions or sample handling issues. Further, two (2) of these forms fail to identify the person who entered the personal note. SWOP did not provide EHD with any other field notes, nor did Mr. Reynosa state in his affidavit whether the community members recorded field data in another manner. EHD requires discovery to obtain the field data or confirm that none was recorded, and to identify the person who recorded the personal note on the two incomplete chain of custody forms.

- i. Provide the laboratory reports for the five (5) VOC samples collected by the San Jose Bucket Brigade which are referenced in SWOP's "Breathe in New Mexico" Report but not described in the Chernaik report, and if any such sample was not submitted to the laboratory or was invalidated by the laboratory, explain the reason and provide all supporting documentation.*

SWOP provided EHD with the laboratory reports for seven (7) VOC samples evaluated in the Chernaik report. However, SWOP's "Breathe in New Mexico" report states the Bucket Brigade actually collected twelve (12) VOC samples. Exhibit 1 at 3. SWOP does not explain the disposition of the missing samples, which may have been invalidated by the laboratory or which may not have shown any VOCs in the San Jose neighborhood. EHD is entitled to discover information about these missing samples, including contemporaneous field data, chain of custody forms, and laboratory reports.

- j. Identify each communication, whether written, electronic, or oral, between SWOP and the laboratory, regarding any of the air samples for the San Jose Bucket Brigade or the methodology used to collect any of the samples, including any results provided by the laboratory.*

As noted earlier, there are significant discrepancies between the number of VOC samples collected by SWOP and the number of VOC samples evaluated in the Chernaik report. For the VOC samples evaluated in the Chernaik report, the laboratory noted several violations of QA/QC requirements, including incomplete chain of custody forms, missing custody seals and trip blanks, and excess holding times. EHD is entitled to discover communications between SWOP and the laboratory regarding the missing samples, and the reliability, accuracy, and validity of the air quality samples cited in the Chernaik report.

- k. *Identify on a map the "Williams & Broadway" location referenced in the Chernaik report.*

SWOP technical witness Dana Rowangould cites the Chernaik report's "notable finding" regarding high concentrations of PM2.5 and environmental carbon detected in samples taken at "Williams & Broadway." Attachment 19 at pp. 4-5. These samples allegedly contain the highest concentrations of PM2.5 and environmental carbon of all the samples taken by the Bucket Brigade. SWOP also cites these samples as evidence of air pollution that exceeds federal ambient air quality standards and that might cause excess risk of cardiovascular and respiratory hospitalizations. *See* Reynosa Affidavit at ¶13. However, EHD cannot locate any place in or near the San Jose neighborhood - or even in the City of Albuquerque - that corresponds to this address. EHD requests discovery to identify the location at which these samples were taken so that it can evaluate the sampling methodology and alleged results.

- l. *Identify any photographs and video recordings that were taken as part of the San Jose Bucket Brigade, including the date, time, place and identity of the photographer or videographer, and provide hard copies and electronic copies of the photographs and electronic copies of the video recordings.*

SWOP's Attachment 3 encourages community members to take photographs and video recordings "to catch a visual image of the pollution." In response, community members took photographs during sampling events. *See* Attachment 17 at November 12, 2013; January 7, 2013; and April 13, 2013. Additionally, SWOP reproduced several photographs in the "Breathe in New Mexico" report that purport to show the Bucket Brigade conducting training and sampling activities. EHD examined these latter photographs to identify potential QA/QC problems, but

was not aware that SWOP and the Bucket Brigade had additional photographs and video recordings that might shed light on their training and sampling. EHD also requests discovery to obtain the photographs identified in Attachment 17, and any other photographs and video recordings taken during sampling events, in order to evaluate SWOP's allegations of air pollution.

- m. Identify each communication, whether written, electronic, or oral, between SWOP, its technical witnesses or Mark Chernaik or his organization or representative, regarding the sampling plan or analysis of any air sample for the San Jose Bucket Brigade or the methodology used to collect any air sample for the San Jose Bucket Brigade, and provide any communication, including any drafts of the final Chernaik report.*

SWOP's technical witness Dana Rowangould relies on the Chernaik report to conclude that air pollution may be affecting the San Jose neighborhood. SWOP's technical witness George Thurston declares that certain pollutants, such as benzene, 1,3-butadiene, naphthalene, and acrolein, occur in the San Jose neighborhood at concentrations that could cause injury to human health. However, neither Ms. Rowangould nor Mr. Thurston state whether they reviewed the sampling plan, or the methodology or laboratory reports for the air quality samples collected by the Bucket Brigade or consulted with Mr. Chernaik regarding his evaluation of those reports. Additionally, Mr. Reynosa, Mr. Benavidez, or both, decided to discontinue VOC sampling in the San Jose neighborhood, according to Mr Reynosa, because the sample size was sufficiently "robust." See Reynosa Affidavit at ¶10. Notably, SWOP has not identified Mr. Chernaik as a technical witness. EHD requests discovery of communications between SWOP, its technical witnesses, and Mr. Chernaik to evaluate the basis for Ms. Rowangould and Mr. Thurston's



reliance on the Chernaik report, and Mr. Chernaik's assessment of the Bucket Brigade's sampling methodology and results, his discussions with Mr. Reynosa or Mr. Benavidez regarding their decision to discontinue VOC sampling, and his preparation of draft and final reports.

## **2. THURSTON REFERENCES**

SWOP submits the technical testimony of George Thurston, which contains numerous short-hand references to documents that are not identified in his list of literature citations, such as "Symanski 2009," "Collins 2015," "Schnatter 2012," "Triggiani 2011," "Terry 2011," "Bollati 2007," "EPA 2003," "Feron 1978," "ATSDR 2005," and "EPA 2002c." EHD attempted to identify these citations, but some of the authors, such as the EPA and ATSDR, have published many documents during the cited years. EHD cannot be expected to accept at face value Mr. Thurston's technical testimony regarding the health effects of toxic pollutants allegedly present in the ambient air of the San Jose neighborhood. Accordingly, EHD requests that SWOP provide full citations for these references, and if the references are not publicly available, the full text of the documents.

## **III. CONCLUSION**

EHD's request for discovery is relevant and not unreasonably burdensome or expensive. The requested information bears directly on SWOP's use of the Bucket Brigade and PM monitoring to show that air pollution will cause, with reasonable probability, injury to human health in the San Jose neighborhood. SWOP technical witnesses and SWOP staff and members cite the Bucket Brigade and PM monitoring and the Chernaik report as evidence of air pollution from Honstein and other unidentified sources. Ms. Rowangould suggests that the Bucket Brigade

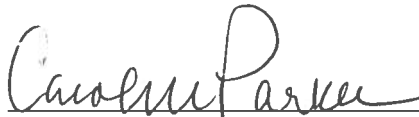
results can be compared to EPA standards and reference levels to determine whether the Honstein facility is causing injury to human health.

SWOP cannot dispute that it has the requested information. SWOP orchestrated and directed the Bucket Brigade, made decisions about when and where to conduct sampling, and when to discontinue sampling, and managed the communications with the laboratory and Mr. Chernaik. SWOP acknowledges in both Mr. Reynosa's affidavit and the "Breathe in New Mexico" report that it has, or should have, the requested information. EHD is entitled to discover information regarding the Bucket Brigade in order to evaluate SWOP's claim that its air quality sampling detected air pollutants in the San Jose neighborhood.

Therefore, for the reasons stated above, EHD requests that the Hearing Officer authorize EHD to propound Interrogatories (not to exceed twenty-five (25)), Requests for Production and Requests for Admission on SWOP.

Respectfully submitted,

CITY OF ALBUQUERQUE  
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**CERTIFICATE OF SERVICE**

I hereby certify that a true and correct copy of this Motion for Discovery was served as described below on December, 14, 2015:

- 1) The City's original document was filed with the Hearing Clerk in the above-captioned matter and nine copies were hand delivered to the Hearing Clerk.
- 2) One additional copy was hand-delivered to the Hearing Clerk for delivery to the Hearing Officer/Air Board Attorney and one copy was sent by electronic mail to:

Felicia Orth  
c/o Andrew Daffern, Hearing Clerk  
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*Attorney for the Albuquerque-Bernalillo County Air Quality Control Board  
and Hearing Officer for AQCB Petition No. 2014-4*

- 3) One hard copy was mailed by first class mail and a copy was sent by electronic mail to:

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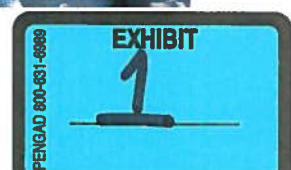
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# Breathe In New Mexico Air Quality Report

Produced by SouthWest Organizing Project in conjunction with the communities of San Jose, Mesquite, and the Navajo Nation





# SouthWest Organizing Project

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## Introduction

This report is the culmination of SouthWest Organizing Project's year-long Breathe In New Mexico campaign, which worked with three environmental justice communities across the state. These three communities (Mesquite, NM; the San Jose Community in the South Valley of Albuquerque, NM; the Navajo Reservation in the area of the Navajo Mine) worked with SWOP over a year to collect their own air quality data in order to provide a clearer picture of what they breathe on a regular basis. These communities all have strong, committed leaders who are working hard to change how polluting industry impacts air quality and the environment where they live.

SWOP utilized the technical expertise of Global Community Monitor, an environmental organization based out of California, to help train the community members on the proper way to use the air quality equipment, collect samples, record air quality logs, and write out chain of custody forms for each sample. This level of training and detail allowed us to duplicate the scientific process of collecting air samples and delivering them to labs in a proper way.

What follows in this report are profiles of the communities SWOP worked with, including the history of the environmental justice issues that they continue to deal with to this day. This report aims to show that air quality issues in New Mexico are not isolated to certain areas, but rather that the large industry presence impacts multiple communities across our state- and those tend to be low-income communities of color. The Breathe in New Mexico campaign highlights the relatively ignored issue of cumulative impacts, in which communities are experiencing pollution from multiple sources in a concentrated area.

The work detailed in this report would not have been possible if not for the community members who were committed to highlight their community's environmental and health issues. These community members became experts in the technical data collection process, and well versed in scientific terminology in order to collect data at a high level. These community leaders have been talking to elected officials about the environmental issues they encounter for years, but now they have added valuable tools to help highlight the pollution where they live.

The data collected established patterns of unhealthy elements in the form of Volatile Organic Compounds, from the presence of chlorobenzene to high levels of elemental carbon along with high levels of crystalline silica found in particulate samples. The presence of these types of unhealthy elements in the air, which aren't monitored under the country's Clean Air Act, highlights why expanded air monitoring is needed in New Mexico. The findings also highlight the issue of cumulative impacts, as communities have to deal with multiple chemicals at unhealthy levels for sustained periods of time.

Despite the hard work of these communities and the quality data collected, community bucket brigades are not enough to address our air quality problems. These communities have established

our state's need to begin looking at cumulative air pollution and its health impacts on communities. Not only that, but regulations and policy need to be strengthened and enacted in order to protect the health of communities who have to live alongside a large industry presence. This report shows that it is not an isolated problem, but one that communities across the state of New Mexico are dealing with on a daily basis.

SWOP would finally like to thank all the community members in Mesquite, NM, the San Jose Community in Albuquerque, and the Navajo Reservation who made immense personal commitments of time and effort to make this project happen. Without the leaders in these communities, this project would not have been as rewarding or informative, and we would still have no idea what is in the air we're breathing.







## SouthWest Organizing Project

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# San Jose Air Quality Report

A product of Breathe In New Mexico



## Albuquerque's San Jose Community

The San Jose neighborhood of southeast Albuquerque is one of the oldest neighborhoods in our city, with a rich history at the center of a growing metropolis. Unfortunately, it's also a community with a toxic legacy- a fate they have fought to change for years. For no less than half a century, residents of this mostly Latino community have fought against the impacts of the large and diverse industry that resides right near their homes, community centers, and schools. As a result of the rail line running alongside their community, as well as zoning laws that cater to heavy industry; residents here have to deal with an industry presence that includes refineries, asphalt companies, an intermodal facility, cement plants, metal recycling plants, and chemical and gasoline storage facilities. The neighboring community of MountainView has experienced the same pollution issues, and also has a long history of fighting back against environmental injustices.

San Jose is also the location of two federally designated Superfund sites, one of which was the first in New Mexico. These Superfund sites resulted in groundwater contamination in the community of San Jose throughout the 1980s and 90s. Community members organized themselves in response to the groundwater contamination, and it is a battle that they are still fighting to this day. These are just some of the elements that have brought San Jose a designation as an environmental justice community.

More recently, San Jose residents have been working to address the toxic smelling odors and air pollution produced by not only the surrounding industry, but also the large amount of diesel trains that sit on the tracks and idle for hours on end. Many community members even complain about smelling these odors inside of their homes, while they lie in bed, or sit down to eat dinner. The health impacts from this pollution are of great concern to community members, and they have fought against new air permits for polluting facilities and have questioned why other facilities are operating without air permits.

The issue that has been of focus lately is cumulative pollution impacts, in which communities are exposed to multiple sources of pollution in a concentrated area. While community members have no choice but to deal with the aggregate impacts of pollution, regulatory bodies look at each site on a case-by-case basis when reviewing air quality permits. While one site may pass an air permit review for their output of Volatile Organic Compounds (VOCs), we argue that regulators should look at the total emissions of VOCs in an area with multiple sites during an air permit review for new and existing facilities.

We are confident that the data, the stories, and the solutions outlined in this report will set us on a path to improve air quality in New Mexico's environmental justice communities, and ultimately improve the quality of life in our state.



## Discussing Health Impacts

Residents in the San Jose neighborhood have worried about the health impacts of industry on their community for decades, but only recently has hard data for the areas been collected and become available. In 2011, Bernalillo County Place Matters conducted a health impact assessment on the communities of San Jose and Mountain View in order to respond to a request for a special use air permit from NMRT, LLC, which was a dirty materials recovery facility.

The health figures reflected in the Place Matters report helped community residents fight back against the plans of NMRT plans to build a dirty materials recovery facility in the area alongside the expansive existing industry. Significant findings in this report, including data on causes of death and frequency of serious illnesses, clearly showed the health disparities that exist between communities like San Jose and Mountain View and other communities in the city of Albuquerque that are less burdened by industry.

“Research has found that the clustering of social, economic and environmental health risks in low-income and minority neighborhoods contributes to sickness and death (Joint Center for Political and Economic Studies, 2011).”

These sobering statistics show us that residents San Jose and Mountain View have a much lower life expectancy than most other areas in Albuquerque, while also having a higher density of environmental hazards than these other areas. Quoting the report, “The predominantly Hispanic communities of Mountain View and San Jose not only suffer from higher death rates and shorter life spans, but from higher poverty, a greater number of heavy industries (Bernalillo County, Office of Environmental Health, 2006), and more severe contamination when compared to other areas in the County.”

Over the course of SWOP’s air quality campaign in this area, community members have told us that seeing the findings of health impact assessment was a critical moment that made them aware of their community’s situation and galvanized them to action. After achieving victory by keeping NMRT from locating in their backyard, community members have been inspired to continue the fight for environmental justice in San Jose and Mountain View.

## Organizing a Bucket Brigade

Community bucket brigades have been the cornerstone of our air quality work, as they combine reliable scientific data with direct community involvement and cooperation. In 2012, San Jose residents decided they needed to take matters into their own hands by providing more context to



**Western Refinery’s Asphalt Refinery on 2<sup>nd</sup> Street in the San Jose neighborhood of Albuquerque. This facility is located near homes and restaurants in the area.**

their air quality issues. A partnership was formed with SWOP to conduct air monitoring (*see Air Bucket Methodology*) through the Breathe In New Mexico bucket brigade. SWOP helped organize a cadre of community members and, with the help of Global Community Monitor, trained these residents on the proper collection and handling of air quality data, and how to proceed with analysis, interpretation and a plan for action.

The first step, as always, was to meet with affected community members to talk about their experiences and get their perspective on environmental justice issues where they live. These conversations led to a common understanding of the issues in the area, as well as potential sources of air pollution. This preliminary information outlined a roadmap of how and where to begin air sampling.



San Jose community members at the SWOP office learning how to build and operate air monitoring buckets.

The next step was partnering with Global Community Monitor to do a series of technical trainings for community members. The first step in community-based air monitoring is the collection of air quality logs, which help provide a narrative of the community member's day-to-day experience. From there, residents were trained on how to correctly use the data collection equipment (VOC bucket and/or particulate monitor), log the sample, and fill out the chain of custody forms to send to the assigned lab. We established a calendar with community

members that included benchmarks to help them schedule their sample set that would be collected over the course of a year. San Jose started their sampling in September of 2012.

The focus of the air monitoring in San Jose was to identify VOCs coming from locations like refineries, refueling stations, and chemical storage facilities by collecting bucket air samples. Particulate matter tests were also performed on diesel emissions coming from trains and 18-wheelers, as well as on dust originating from cement plants.

San Jose residents collected a total of 12 VOC samples and 6 particulate samples over a year's timeframe. Over the course of data collection, community members also documented acute health effects like headache, nausea and respiratory problems that coincided with a prevalence of heavy chemical odors such as diesel fuel, gear oil and spray paint.



## San Jose Air Quality Data

### Results of Data Collection

San Jose residents used two different methods of air quality data collection to study the air in their community. Residents took data on both Volatile Organic Compounds and Particulates. Field data included start and end time of sampling, temperature, meteorological conditions and notable circumstances, which was recorded contemporaneously by trained community volunteers.

To get a clear, scientific understanding of the sample results, SWOP and Global Community Monitor worked with Dr. Mark Chernaik of Science for Citizens for help in analyzing the results of the collection of samples.

What follows is an analysis of our air samples from Mark Chernaik, Ph. D., of Science for Citizens. We worked with Dr. Chernaik throughout the campaign to get scientific analysis of each sample we took, and, at the end of the campaign, he then presented us with this full analysis of all the samples. Along with this, Dr. Chernaik provides his final conclusion on how these samples relate to the negative impacts on public and environmental health in this area.

### RESULTS - VOC LEVELS

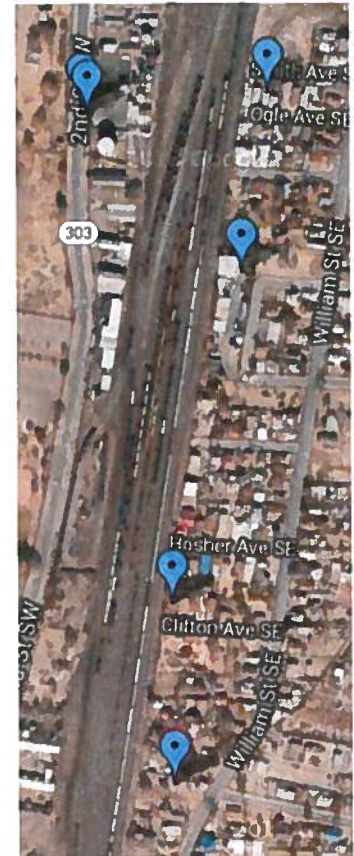
Seven (7) grab samples of air were collected by trained community volunteers over a period of approximately one year. The first air sample was collected on September 13<sup>th</sup>, 2012, and the last air sample was collected on September 18<sup>th</sup>, 2013.

#### Chlorobenzene

Air samples collected from southwest Albuquerque were remarkable in that each sample contained detectable and significantly elevated levels of chlorobenzene. The average concentration found in all seven samples is  $23.6 \mu\text{g}/\text{m}^3$ , ranging from a low of  $8.5 \mu\text{g}/\text{m}^3$  to a high of  $50 \mu\text{g}/\text{m}^3$ .

**These levels are roughly 10 times higher than concentrations of chlorobenzene commonly found in urban ambient air.** According to the U.S. Agency for Toxic Substances and Disease Registry:

“Air samples at 56 localities in the United States in 1982 had mean chlorobenzene concentrations of about  $[3.0 \mu\text{g}/\text{m}^3]$  the highest concentrations in urban and suburban areas, at much lower levels at the sites of production, but was not detectable in rural and remote areas (Brodzinsky and Singh 1983). This suggests a substantial contribution to urban air levels by small industry and consumer products but also a short residence time in the air. A study of



Overhead map view of some sample sites located along Williams Street in San Jose.



New Jersey waste sites found similar air levels of chlorobenzene [ $2.5 \mu\text{g}/\text{m}^3$ ] (Harkov et al. 1985)."<sup>1</sup>

These consistently elevated levels of chlorobenzene in southwest Albuquerque may also be of significance to public health in that levels are averaging higher than the U.S. Environmental Protection Agency's (U.S. EPA) provisional Reference Concentration (RfC) for chlorobenzene. According to the U.S. EPA:

"EPA has calculated a provisional Reference Concentration (RfC) of 0.02 milligrams per cubic meter ( $\text{mg}/\text{m}^3$ ) [equivalent to  $20 \mu\text{g}/\text{m}^3$ ] for chlorobenzene based on kidney and liver effects in rats. The RfC is an estimate (with uncertainty spanning perhaps an order of magnitude) of a continuous inhalation exposure to the human population (including sensitive subgroups), that is likely to be without appreciable risk of deleterious noncancer effects during a lifetime. It is not a direct estimator of risk but rather a reference point to gauge the potential effects. At exposures increasingly greater than the RfC, the potential for adverse health effects increases. Lifetime exposure above the RfC does not imply that an adverse health effect would necessarily occur. The provisional RfC is a value that has had some form of Agency review, but it does not appear on IRIS. (6)"<sup>2</sup>

What is the source of chlorobenzene in southwest Albuquerque is, therefore, an important question, but for which there is not yet a clear answer, only reasonable possibilities. All of the samples were collected near a railway corridor, and several of the samples were collected in close proximity to an asphalt storage terminal operated by Western Refining facility on 2040 2nd Street. Rail car service facilities commonly use chlorobenzene as degreasing solvent.<sup>3</sup> Chlorobenzene is used as a solvent in the production of bitumen and asphalt coatings and, according the U.S. EPA, asphalt paving mixtures and blocks are potential sources of chlorobenzene.<sup>4</sup>

### Toluene

Air samples collected from in southwest Albuquerque were also remarkable in that each sample contained detectable levels of toluene. The average concentration of toluene found in all seven samples is  $10.9 \mu\text{g}/\text{m}^3$ , ranging from a low of  $8.9 \mu\text{g}/\text{m}^3$  to a high of  $15 \mu\text{g}/\text{m}^3$ . However, these levels of toluene are not higher than concentrations of toluene commonly found in urban ambient air.

## RESULTS - PARTICULATE MATTER AND ELEMENTAL CARBON LEVELS

### Particulate Matter levels

There is a robust association between health effects and ambient levels of particulate matter. Very small (fine) particles exert disproportionately more health effects than do larger particles. According to the U.S. EPA:

<sup>1</sup> <http://www.atsdr.cdc.gov/toxprofiles/tp131-c5.pdf>

<sup>2</sup> <http://www.epa.gov/ttnatw01/hlthef/chlorobe.html>

<sup>3</sup> See, for example: GE Railcar (Elkton, Maryland). <http://www.epa.gov/reg3wcmd/ca/md/webpages/mdd078288354.html>

<sup>4</sup> U.S. EPA (1993) "Locating And Estimating Air Emissions From Sources Of Chlorobenzenes."

"Particles less than 10 micrometers in diameter (PM<sub>10</sub>) pose a health concern because they can be inhaled into and accumulate in the respiratory system. Particles less than 2.5 micrometers in diameter (PM<sub>2.5</sub>) are referred to as "fine" particles and are believed to pose the largest health risks. Because of their small size (less than one-seventh the average width of a human hair), fine particles can lodge deeply into the lungs.

"Health studies have shown a significant association between exposure to fine particles and premature mortality. Other important effects include aggravation of respiratory and cardiovascular disease (as indicated by increased hospital admissions, emergency room visits, absences from school or work, and restricted activity days), lung disease, decreased lung function, asthma attacks, and certain cardiovascular problems such as heart attacks and cardiac arrhythmia. Individuals particularly sensitive to fine particle exposure include older adults, people with heart and lung disease, and children."<sup>5</sup>

Seven filtered air samples from southwest Albuquerque were analyzed for PM<sub>2.5</sub> levels. Most of the PM<sub>2.5</sub> levels in filtered air samples collected in southwest Albuquerque were relatively low. However, a PM<sub>2.5</sub> level of 75.7 µg/m<sup>3</sup> was measured at Williams & Broadway on 13 August 2013, more than twice the U.S. EPA 24-hour standard for PM<sub>2.5</sub> of 35 µg/m<sup>3</sup>. Primarily because of this sample, the long-term average PM<sub>2.5</sub> level (six samples over a period of six months) now stands at 18.9 µg/m<sup>3</sup>, above the U.S. EPA annual standard for PM<sub>2.5</sub> of 12 µg/m<sup>3</sup>.

### Elemental Carbon levels

Vehicle exhaust, primarily diesel exhaust, is the predominant source of EC in ambient air.

- When EC levels are above 1 microgram per cubic meter (µg/m<sup>3</sup>), then one can conclude that this location is an area impacted by diesel engine emissions.<sup>6</sup>
- When 24-hour EC levels at a location are above 1.36 µg/m<sup>3</sup>, then they are high enough to be associated with an excess risk of cardiovascular mortality two and three-days post exposure.<sup>7</sup>
- When 24-hour EC levels at a location are above 0.838 µg/m<sup>3</sup>, then they are high enough to be associated with an excess risk of cardiovascular and respiratory hospitalizations on the day of exposure.<sup>8</sup>

Nine filtered air samples from southwest Albuquerque were analyzed for EC levels. EC levels in samples collected at the 2500-2600 block of Williams Street were consistently high, indicating impacts from heavy vehicle (diesel engine) emissions. EC levels exceeded 0.838 µg/m<sup>3</sup> in three of four samples from this location, high enough to be associated with an excess risk of cardiovascular and respiratory hospitalizations on the day of exposure. A EC level of 1.76 µg/m<sup>3</sup> was

<sup>5</sup> [http://www.epa.gov/ttn/naaqs/pm/pm25\\_index.html](http://www.epa.gov/ttn/naaqs/pm/pm25_index.html)

<sup>6</sup> Even in urban areas, levels of EC in air samples almost never exceed 1 µg/m<sup>3</sup> unless the sample is within a few hundred feet of road traffic. See: <http://www.mnp.nl/bibliotheek/rapporten/500099011.pdf>

<sup>7</sup> Ostro, et al. (2008) "The impact of components of fine particulate matter on cardiovascular mortality in susceptible subpopulations," *Occup. Environ. Med.*, 65:750-756.

<sup>8</sup> Bell, et al. (2009) "Hospital Admissions and Chemical Composition of Fine Particle Air Pollution," *Am J Respir Crit Care Med*, 179:1115-1120.





measured at Williams & Broadway on 23 August 2013, substantially higher than levels associated with an excess risk of cardiovascular mortality two and three-days post exposure

For several samples with low EC levels were low (April 22-23 and May 5-6) windy conditions prevailed.<sup>9</sup> On April 22nd, wind speeds averaged 12 mph with gusts of up to 37 mph, with winds out of the SW; on April 23rd, wind speeds averaged 13 mph with gusts of up to 44 mph, with winds out of the N. On May 5th, wind speeds averaged 19 mph with gusts of up to 47 mph, with winds out of the ESE; On May 6th, wind speeds averaged 12 mph with gusts of up to 31 mph, with winds out of the SSW. On the one day when EC levels were quite high (Jan 26-27th), winds were quite lower, averaging only 7-8 mph. On windy days, ambient air levels of pollutants from a point source are lower simply because there is more total air passing over a location for pollutants to disperse into.

I, Dr. Chernaik, would conclude, therefore, that the sampling location – a mixed residential-industrial area along a railway corridor in southwest Albuquerque – is adversely impacted by diesel emissions, impacts which are mitigated some by occasional days with high winds.



**Children playing amongst idling trains and polluting facilities is an everyday reality for families living in the San Jose community.**

<sup>9</sup> [http://www.wunderground.com/history/airport/KABQ/2013/4/22/DailyHistory.html?req\\_city=N&req\\_state=N&req\\_statename=N](http://www.wunderground.com/history/airport/KABQ/2013/4/22/DailyHistory.html?req_city=N&req_state=N&req_statename=N)  
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[http://www.wunderground.com/history/airport/KABQ/2013/1/27/DailyHistory.html?req\\_city=N&req\\_state=N&req\\_statename=N](http://www.wunderground.com/history/airport/KABQ/2013/1/27/DailyHistory.html?req_city=N&req_state=N&req_statename=N)



## Community Improvements

### Where Are We Now?

The San Jose community in Albuquerque has a rich history of activism and fighting for a better quality of life in their community, and as you've seen throughout this report, that fight is very much alive today. San Jose is dealing with a host of problems originating from a heavy industry presence that literally represents a life or death situation- and this is a story we've heard before. Black and Brown Berets organized in the 1960s to relocate a sewage waste treatment plant, community awareness councils have been formed in the community and have done great work, and churches and schools have been involved in advocating on behalf of the community.

Despite all this incredible community action, and all the progress they've made along the way, the San Jose neighborhood still exhibits a lower quality of life than the rest of the city of Albuquerque. We cannot leave a legacy for San Jose that the people cared deeply, fought hard, and died early. We need policy makers to fully support the efforts of the people of San Jose.

SWOP has worked directly with San Jose residents to learn about their community and to develop solutions and recommendations for the health problems where they live. SWOP has canvassed the San Jose area, engaged in direct conversations, and held community meetings to provide a space where community members can share their experiences with environmental justice issues and share their thoughts on remedying the situation. These conversations have yielded a range of recommendations that extend past air quality regulations, including:

- Place an air monitor in the community in order to collect baseline air quality data at the point of impact; increase monitoring around sensitive areas like schools and community centers.
- Increase communication and outreach to community members when air permit requests for a facility in the community are introduced.
- Prioritize community participation and engagement during environmental assessment processes and community meetings.
- Enact ordinances that prohibit heavy trucks from using residential streets in San Jose where children play.
- Improve infrastructure in the neighborhood: sidewalks, street lights, streets, bus stops, bike lanes, etc.
- Fund the creation and development of more community centers, parks, and health centers.
- Work with business that locate in the area to prioritize hiring people from the community, to have job training and GED programs, and to not discriminate against those who have been previously incarcerated.



## Policy Improvements

The Breathe in New Mexico campaign aimed to engage community members, strengthen the good community work they were already doing by providing more data to their argument, and come out with some positive community and policy gains. By working with elected officials and regulatory bodies, there is an opportunity to strengthen air quality regulations, as well as the air permit review process.

During the 2013 Legislative Session, SWOP helped continue the work that community members from Mountain View and other advocates started in the 2009 session by re-introducing the Consolidated Environmental Review Act (CERA). CERA aimed to provide the same protection on the state level that the National Environmental Protection Act (NEPA) does on the federal level.

If passed, the bill would have set up a review process for proposed projects affecting the environment that are funded by the State or for which a State permit, license or other such permission is needed. The bill also ordered a look at cumulative impacts during the review and would give special consideration to environmental justice communities who are already exposed to a large industry presence.

During the 2013 session, SWOP worked with past advocates of the bill and mobilized community members from San Jose to speak about their experience as an environmental justice community and the need for stronger air quality regulations. It was a tough fight, but eventually CERA was voted down in committee.

SWOP also worked hard with community members to try and pass a very similar bill like CERA in Albuquerque with the Albuquerque Air Quality Control Board, but the board decided to also side with industry and wouldn't even allow a hearing to discuss the potential regulation amendment.

Cumulative impacts are not considered by regulatory bodies, which is how a neighborhood like San Jose can become infested with overbearing industry presence. Neighborhoods like this would greatly benefit from policies that promote studies of cumulative impacts. This policy would empower regulators with another tool to improve our communities' air quality and quality of life. Regulations and policies that look at cumulative impacts are not at all common, and this policy is an opportunity for Albuquerque to lead the charge.



A decorative graphic consisting of several overlapping, semi-transparent blue shapes that create a sense of depth and movement, located at the top left of the page.

## Moving Forward

Through the community-based bucket brigades we now have a strong set of data that reveals the presence of volatile organic compounds in San Jose, and we can trace a direct link to documented health disparities in the area. We now have an opportunity to bring all of this community participation, along with the data, and create policy changes that will establish a better quality of life for San Jose. We are very close to making changes in the process by which air permits are reviewed and issued, and ultimately, improving the air that we breathe.

San Jose residents are motivated to move this process with elected officials because, as we try to reach a resolution on this issue, more problems keep cropping up. Community members are already challenging a proposal to build a highway extension that would run right into the San Jose neighborhood. The project has been an opponent of the people from the beginning as it has elicited very little public participation while representing, if built, a significant increase in the amount of industry and associated pollution in San Jose.

SWOP has had a great opportunity to work with the incredibly strong San Jose community and the amazing people who live there. The people have driven this work and will continue to help shape where the environmental justice work heads in the future. Policy and regulation campaigns will continue alongside direct work to help improve the quality of life of the community as a whole. The Breathe in New Mexico campaign aims to have many more victories working with communities as we move into organizing on environmental issues in 2014 and beyond.



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# Four Corners Air Quality Report

A product of Breathe In New Mexico



## Four Corners and the Navajo Mine Area

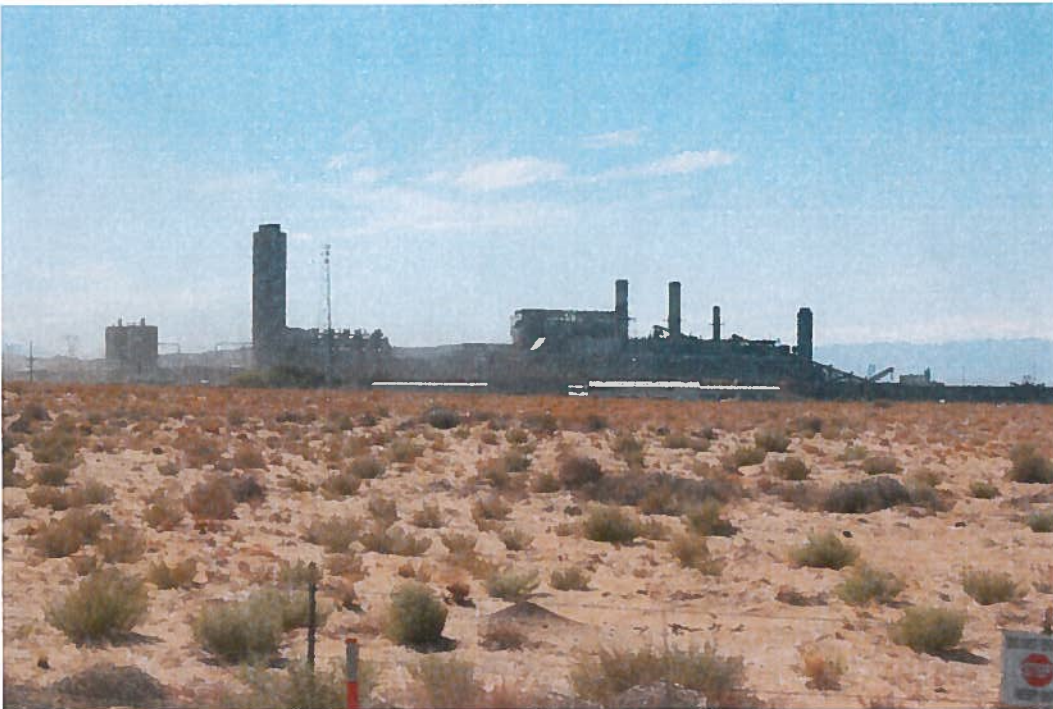
The Navajo Nation is a sovereign nation that covers about 27,000 square miles within the states of Arizona, New Mexico, and Utah. The Navajo Nation is the largest reservation in the United States. It's a place where many roads have never been paved, and where rural communities, often families live isolated in remote areas. These communities and families are surrounded by six coal mines and six coal-fired power plants. For close to half a century, four of the coal mines and two of the largest coal-fired power plants have been operating on the Navajo Nation – providing electricity now only to Arizona and New Mexico. California and Nevada divest their interest and shares from coal. The Four Corners Coal-Fired Power Plant and Navajo Mine are on the Navajo Nation located in northwestern New Mexico next to the San Juan River.

We cannot discuss the current condition of the Diné people in the Four Corners region without acknowledging the hardships they've endured under the United States government. This imperialist relationship began with land theft, genocide, and mass relocation, as was endured in the infamous Navajo Long Walk. The environmental justices imposed on the Navajo Nation have continued throughout this country's history, up to the modern day, where people live amongst highly advanced and highly polluting energy facilities, while many families have no running water or electricity.

The area of focus for the Breathe in NM campaign was the Navajo Mine. The Navajo Coal Mine is an open pit coal mine near Farmington, New Mexico that supplies coal to the Four Corners Power Plant. The San Juan Generating Station is located about ten miles from the Four Corners Power Plant. These plants provide a bulk of the energy used throughout the Western United States- 1 billion gigawatts.

The presence of these two coal plants so close to one another, along with an active nearby mine, has created very bad air quality conditions for this area. Community members have been advocating for better air and water quality by trying to get stricter regulations on the power plants and the mine. They've also fought against efforts to take away their water rights and are now fighting the potential extension of the leases on the Four Corners Power Plant and Navajo Mine, as well as the San Juan Generating Station.

The fight for a better quality of life continues on the Navajo Nation. We are confident that the data, stories, and the solutions outlines in this report will set us on a path to help improve the air quality in the Four Corners region of the Navajo Nation, and assist these community members in their environmental justice fights.



**Four Corners Power Plant (pictured) receives coal from the Navajo Mine. It is one of two power plants located in the Four Corners region and is cause for much of the pollution occurring in the southwestern United States.**

## Discussing Health Impacts

Reports of poor air quality and its negative health impacts have long surrounded the industrial energy operations on the Navajo Nation. Many residents suffer from serious respiratory illnesses such as asthmas and Chronic Obstructive Pulmonary Disease (COPD). Nurses, health professionals, and communities have also noted the visible increase of asthma in children, a condition that is also abnormally prevalent in Albuquerque's San Jose neighborhood. Unfortunately, there is a lack of health based research and data for the Navajo Nation, but a visit to the homes of the people who live there and a conversation with them illustrates how air quality in the area has changed over time while the quality of health has worsened.

Poor air quality affects all aspects of life for impacted communities living in the Four Corners region. There have been drastic impacts on the environment, and many of the scars will never heal. Elders on the Navajo Nation can share stories of freshwater springs that they visited as youth now going dry as a result of the power plants' incredible water consumption for their energy production and coal slurry.

On top of that, now some of the residents we worked with on data collection reported mass illness and deaths of their livestock as a result of terrible air quality, as well as animals going blind and suffering from other health issues. One of the families we worked with on the campaign had just buried many of their sheep when we first visited them.



Local communities have also warned that the expansion of the Navajo Mine will mean the eradication of medicinal plants that they've used for generations. This is of large cultural significance as the eradication of these ceremonial plants will impact how the indigenous people in this area perform their ceremonies.

## Organizing a Bucket Brigade

Community bucket brigades have been the cornerstone of our air quality work, as they combine reliable scientific data with direct community action. To conduct particulate air monitoring (see Air Bucket Methodology), SWOP partnered with Global Community Monitor to train community members on the proper collection of air quality data, as well as how to proceed with analysis, interpretation, and a plan for action. Community group Diné C.A.R.E. (Diné Citizens Against Ruining our Environment) was the other important partner in the campaign as they helped provide on-the-ground support to the community members during their data collection, while also continuing their important work of fighting against environmental injustices on the Navajo Nation.

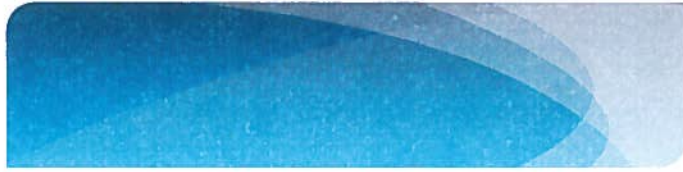


**Navajo Nation residents participate in training on proper use of the Mini Vol particle monitor.**

The community process of sharing stories and information is what guides the direction of the Breathe In New Mexico campaign. Diné C.A.R.E. facilitated discussions with SWOP and concerned community members to talk about their environmental justice issues they've been dealing with for generations. Residents on the Navajo Nation have long been concerned about air quality issues where they live, and have led many large and successful campaigns over the years to improve this. Thus, people were excited for the opportunity to collect hard air quality data. This preliminary information helped establish what kind of

air sampling was needed and where to implement that sampling.

The next step was to then partner with Global Community Monitor on a technical training for the involved community members. The training detailed the collection of air quality logs, which help provide a narrative of the community member's day-to-day experience, as well as the correct use of the particulate monitor, logging samples, and filling out the chain of custody forms that accompany the air samples to the assigned lab. We established a calendar with community members to help them schedule their sample set to be collected over the course of one year. Four Corners residents began their sampling in September of 2012.



The focus of the air monitoring in the Four Corners region around the Navajo Mine was to identify the presence and concentration of particulate matter as a byproduct of activities at the mine, which produces more than 8.5 million tons of coal annually. These activities include blasting the coal in the mine, collecting the coal with large dragline machines, and transporting the coal via large trucks.

Four Corners residents collected thirty (30) samples at the “Ram Springs Valley” location and twenty (20) samples were collected at the “Dixon on NR 5082” location over a period of approximately one year (from September 13<sup>th</sup>, 2012 to August 31<sup>st</sup>, 2013).

## Four Corners Air Quality Data

### Results of Data Collection

*What follows is an analysis of our air samples from Mark Chernaik, Ph. D., of Science for Citizens. We worked with Dr. Chernaik throughout the campaign to get scientific analysis of each sample we took, and, at the end of the campaign, he then presented us with this full analysis of all the samples. Along with this, Dr. Chernaik provides his final conclusion on how these samples relate to the negative impacts on public and environmental health in this area.*

Data was collected from two locations that surround the Navajo mine. The two locations were: 1) the “Ram Springs Valley” location, approximately 900 meters west of the open pit mine; and 2) the “Dixon on NR 5082” location, approximately 1400 meters east of the open pit mine.

### Methods

Samples were collected by trained community volunteers using an Airmetrics MiniVol portable air sampler equipped with 47-mm Teflon filters. Samples were collected over 24-hour periods at a constant flow rate (typically 4.5 liters per minute). A PM<sub>10</sub> impactor was used, enabling collection of particulate matter with aerodynamic sizes of less than 10 microns. Field data, including start and end time of sampling, temperature, meteorological conditions and notable circumstances, were recorded contemporaneously by trained community volunteers, and filters were shipped to ChesterLabNet in Tigard, Oregon, for analysis. Particulate matter levels were determined gravimetrically. Levels of metals and other elements were determined by X-ray fluorescence (following EPA method IO-3.3).

Thirty (30) samples were collected at the “Ram Springs Valley” location and twenty (20) samples were collected at the “Dixon on NR 5082” location over a period of approximately one year (from September 13<sup>th</sup>, 2012 to August 31<sup>st</sup>, 2013). A Field Blank collected on January 30<sup>th</sup>, 2013, at the “Dixon on NR 5082” location registered negligible levels of PM<sub>10</sub> and elements.

## RESULTS

The samples in the dataset are 24-hour samples and, therefore, can be compared directly to the U.S. EPA and WHO short-term, health-based standards. Although PM<sub>10</sub> levels did not exceed the U.S. EPA short-term standard of 150 µg/m<sup>3</sup>, 10 air samples (representing 20% of the dataset) collected at the following days and at the following locations would be considered unsafe as measured by the 24-hour WHO ambient air quality guidelines of 50 µg/m<sup>3</sup> for PM<sub>10</sub>.

- A PM<sub>10</sub> level of 137.9 µg/m<sup>3</sup> on September 20<sup>th</sup>, 2012 at Ram Springs Valley
- A PM<sub>10</sub> level of 53.1 µg/m<sup>3</sup> on December 4<sup>th</sup>, 2012 at Ram Springs Valley
- A PM<sub>10</sub> level of 66.1 µg/m<sup>3</sup> on January 18<sup>th</sup>, 2013 at Ram Springs Valley
- A PM<sub>10</sub> level of 57.9 µg/m<sup>3</sup> on January 22<sup>nd</sup>, 2013 at Ram Springs Valley
- A PM<sub>10</sub> level of 88.3 µg/m<sup>3</sup> on May 30<sup>th</sup>, 2013 at Dixon on NR 5082
- A PM<sub>10</sub> level of 57.4 µg/m<sup>3</sup> on June 5<sup>th</sup>, 2013 at Ram Springs Valley
- A PM<sub>10</sub> level of 78.1 µg/m<sup>3</sup> on June 8<sup>th</sup>, 2013 at Ram Springs Valley
- A PM<sub>10</sub> level of 73.9 µg/m<sup>3</sup> on June 13<sup>th</sup>, 2013 at Ram Springs Valley
- A PM<sub>10</sub> level of 69.7 µg/m<sup>3</sup> on June 24<sup>th</sup>, 2013 at Dixon on NR 5082
- A PM<sub>10</sub> level of 110.6 µg/m<sup>3</sup> on July 1<sup>st</sup>, 2013 at Dixon on NR 5082

Because samples were collected for approximately one year, average PM<sub>10</sub> can be directly compared to the World Health Organization's (WHO) annual health-based standard of 20 µg/m<sup>3</sup>. (NOTE: The US. EPA does not have an annual average standard for PM<sub>10</sub>, instead choosing to regulate public exposure to only very fine particulate matter (PM<sub>2.5</sub>), adopting a standard of 12 µg/m<sup>3</sup> for an annual average).

PM<sub>10</sub> levels at both locations averaged 35.9 µg/m<sup>3</sup>, nearly 180% of the WHO health-based standard of 20 µg/m<sup>3</sup>. PM<sub>10</sub> levels were slightly worse at the Ram Springs Valley location, averaging 38.7 µg/m<sup>3</sup> (30 samples) than at the Dixon on NR 5082 location, averaging 31.6 µg/m<sup>3</sup>.

### Silicon

The silica content of coal dust is a well-known occupational health hazard. According to the California Office of Environmental Health Hazard Assessment (OEHHA):



Overhead map of the Navajo Mine and the sample sites on both sides.



“Inhalation of crystalline silica initially causes respiratory irritation and an inflammatory reaction in the lungs (e.g., Vallyathan et al., 1995). Acute exposures to high concentrations cause cough, shortness of breath, and pulmonary alveolar lipoproteinosis (acute silicosis)... In a report on the hazards of exposure to crystalline silica, the American Thoracic Society (1997) stated: “Studies from many different work environments suggest that exposure to working environments contaminated by silica at dust levels that appear not to cause [silicosis] can cause chronic airflow limitation and/or mucus hypersecretion and/or pathologic emphysema.” Hnizdo and Vallyathan (2003) also concluded that “chronic levels of silica dust that do not cause disabling silicosis may cause the development of chronic bronchitis, emphysema, and/or small airways disease that can lead to airflow obstruction, even in the absence of radiological silicosis.” Fibrotic lesions associated with crystalline silica have also been found at autopsy in the lungs of granite workers who lacked radiological evidence of silicosis. ...The internal process can continue after external exposure ends.”<sup>1</sup>

On the basis of epidemiological studies, the OEHHA derived an inhalation chronic reference exposure level (REL) for silica - a level below which no adverse effects due to prolonged exposure would be expected in the general public - of only  $3.0 \mu\text{g}/\text{m}^3$ .<sup>2</sup>

Since levels of metals and other elements were determined by X-ray fluorescence (following EPA method IO-3.3, data was obtained only on silicon levels in the filtered air samples collected near the Navajo Coal mine. Nonetheless, levels of silicon were very significant: Silicon levels at both locations averaged  $3.6 \mu\text{g}/\text{m}^3$ . Silicon levels were slightly worse at the Ram Springs Valley location, averaging  $4.1 \mu\text{g}/\text{m}^3$  (30 samples) than at the Dixon on NR 5082 location, averaging  $2.9 \mu\text{g}/\text{m}^3$ .

The question remaining is the health significance of these silicon levels, since exposure only to crystalline silica is a public health risk. Silica (or silicon dioxide,  $\text{SiO}_2$ ) is the predominant, nearly exclusive form of silicon in filtered air samples. Since the ratio of the molecular weight of  $\text{SiO}_2$  to silicon is 2.14 (60/28), then it reasonable to conclude that silica levels at both locations averaged  $7.7 \mu\text{g}/\text{m}^3$ , with silica levels at the Ram Springs Valley location averaging  $8.8 \mu\text{g}/\text{m}^3$  and silica levels at the Dixon on NR 5082 location averaging  $6.2 \mu\text{g}/\text{m}^3$ . Quartz, a form of crystalline silica, is the predominant form of silica in coal dust and the ratio of quartz to silicon in filtered air samples is typically near unity in most areas of the



The Navajo Mine looms large in the background of a residence sample site.

<sup>1</sup> California OEHHA (December 2008) "Individual Acute, 8-Hour, and Chronic Reference Exposure Level Summaries", at page 486. [http://oehha.ca.gov/air/hot\\_spots/2008/AppendixD3\\_final.pdf#page=486](http://oehha.ca.gov/air/hot_spots/2008/AppendixD3_final.pdf#page=486)

<sup>2</sup> Collins, J. F., Salmon, A. G., Brown, J. P., Marty, M. A., & Alexeeff, G. V. (2005). Development of a chronic inhalation reference level for respirable crystalline silica. *Regulatory Toxicology and Pharmacology*, 43(3), 292-300.





United States.<sup>3</sup> Therefore, in my opinion, the data of this report strongly suggests chronic exposure to crystalline silica levels near the Navajo Coal mine that are a public health concern.

## Community Improvements

### Where Are We Now?

Residents on the Navajo Nation and in the Four Corners region have fought hard for generations to bring to light the environmental injustices they face as a result of the coal mines and coal-fired power plants that are located in their community. The Navajo People are consistently fighting to keep their water rights, fighting against the corruption of their government, and one of the most current fights involves the people of the Navajo Nation fighting against the extension of the mine lease and the lease of two coal-fired power plants.

As the fight continues, community members have made recommendations on quality of life improvements that would drastically help if implemented now. These include:

- Level out roads for residents. Residents who live in the area of mine describe washboard like roads that have large mine trucks running on them at all hours of the day.
- Provide and place water tanks closer to their homes.
- Provide hay to residents because there is lack of adequate grazing area due to the impact on vegetation from mine dust.
- Electricity – provide renewable energy, solar and wind to communities surrounding the mine and within the lease.
- Compensation for animal losses and provide veterinary service for families within the mine and surround the lease.


## Policy Improvements

Our conversations with community members and members of Diné C.A.R.E. also brought up many recommendations for improvements that they would like to see on both a policy and regulatory level in the Four Corners region. What follows are these recommendations:

- Renegotiate/renew the customary use lease for new generations of families
- Prevent the purchase of the Navajo Mine from BHP Biliton by the Navajo Nation.
- Challenge Navajo mine on their fugitive dust permit.
- Develop regulations/policies for fugitive dust in new permits or current permit – with set radius and buffer zones. Denote certain times of day for this matter to be able leave area of work within the zone of the mine.

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<sup>3</sup> USEPA. 1996. U.S. Environmental Protection Agency. Ambient Levels and Noncancer Health Effects of Inhaled Crystalline and Amorphous Silica: Health Issue Assessment. EPA/600/R-95/115. Office of Research and Development. Washington, DC: U.S. EPA.

- 
- Develop policy for particulate matter and mercury in new/current permits for residents with set radius and buffer zones. And denote certain times of day for this matter to be able leave area of work.

## Moving Forward

Through the community-based bucket brigade with community members in the Four Corners region we now have a strong set of data that reveals the presence of particulate matter and crystalline silica that are cause of concern for the surrounding community's health. We now have an opportunity to bring all this community participation, along with the data collected, to create policy changes that will establish a better quality of life in the Four Corners region on the Navajo Reservation. We hope the data we've collected will force the Navajo Mine to improve their mining practices, as well as help other regulatory bodies look at how to curb emissions coming from the mine.

Navajo Nation residents are now calling for extensions to comment on the environmental impact statement for the Four Corners Power Plant and Navajo Mine. Findings from our data collection show that living in proximity to the mine poses health risks to not only humans, but the plant and animal life in the area.

There is a great deal of potential for the Navajo Nation to move away from uranium and coal energy production and to move into a clean energy economy that uses solar and wind resources to provide energy. We hope that our report will help provide an impetus to move towards cleaner forms of energy that still can provide jobs to the Navajo Nation, while drastically improving impacts on human health and the environment.



## SouthWest Organizing Project

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# Mesquite Air Quality Report

A product of Breathe In New Mexico

## Introduction to Mesquite, New Mexico

Mesquite is a small town in southern New Mexico that was established in 1882. It is a predominantly Hispanic community that has a rich agricultural history and a population of about 1,112 people. It's a great community with a lot of history, culture, and good people.

While Mesquite still has a lot of agricultural activity, it now has a very large dairy presence with multiple concentrated animal feed operations (CAFOs) around the town. On top of that, Mesquite residents deal with the Helena Chemical Company facility that is located in the middle of the town.

Helena Chemical is one of the largest producers of agricultural chemicals and fertilizers in America. The facility in Mesquite is a specialty fertilizer and chemical agricultural processing and distribution facility that also happens to be located within a mile of the Mesquite Elementary School. The facility is also located next to many homes in the area. Residents that live nearby complain about strong chemical odors that come from the facility. Some of these residents cannot even use their air conditioners in the summer as it brings those chemical odors more into their home. These residents of Mesquite have concerns of the dangers to their lives and property from a chemical spill, fire or explosion as a result of Helena Chemical's operations.



**Mesquite community members have to deal with many of the nuisances that dairies and their large concentrated animal feed operations (CAFOs) bring to the community.**

Since 2004, Helena Chemical has, on more than one occasion, violated state environmental regulations, jeopardizing the health and well-being of Mesquite residents. These violations have resulted in \$472,000 in penalties. Yet despite not operating well under their air permit, Helena sought cancellation of their permit in 2008. And even though it had multiple violations and thousands of dollars of air quality permit fines, Helena was able to work with the New Mexico Environment Department to get its air permit rescinded in 2012. At this moment, they are still operating without an air permit.

Besides Helena, residents also complain about the air quality from the large and multiple dairies that are located in Mesquite. Besides the strong odors these CAFOs put off, they also increase the amount of mosquitoes and flies in the area. The dairies are also of large concern in regards to water quality since they can contaminate the local water system with their wastes.

Residents of Mesquite are aspiring for a better quality of life and have started school gardens and revitalized their community center recently as a result of this. We are confident that the data, stories, and solutions outlined in this report will help them on their path to improve the air quality in their community of Mesquite.



## Discussing Health Impacts

In 2005, the Border Health Office and the New Mexico Department of Health put together a health impact assessment (HIA) for the town of Mesquite as a result of their concerns of health issues related to industrial and agricultural practices. Many of the findings from the HIA pointed out many of the concerns community members had been bringing up for years.

During the 2004-5 school year, nurses at Mesquite Elementary School noted high instances of asthma, allergies, and pink eye. The Gadsden Independent School District recognized the high asthma rates of students in their district in Southern New Mexico, as well as acknowledging the potential impact of industrial and agricultural operations on school environments in Southern New Mexico.



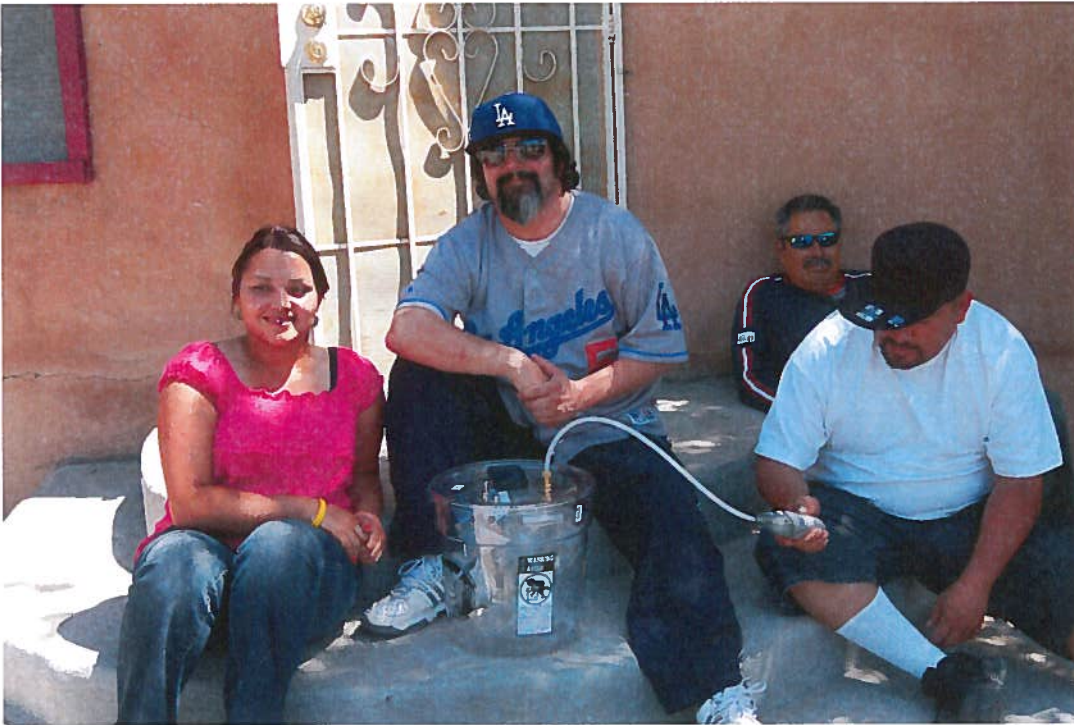
**View of Helena Chemical's outside processing, storage, and transporting area.**

portion of them could produce chronic health effects. Some of these health effects include, acute irritation to the eyes, skin, respiratory, and gastrointestinal systems, while many others are hazardous to the central nervous and reproductive systems.

The HIA also notes that the Helena Chemical plant is located in the middle of a residential community and near an elementary school, yet was not in compliance with the air permits it had with the New Mexico Environment Department. This gave cause for concern from residents around potential health effects from fertilizer dust clouds and ammonia like fumes (volatile organic compounds) from the daily operations of Helena Chemical. From the list of chemicals on its Tier 2 report, which includes insecticides, pesticides, herbicides, and fertilizers, it was shown that each of these chemicals have the potential to cause acute health effects, and large

The HIA cited the potential for groundwater contamination that originates from cow wash water flowing into the water table which would lead to nitrate contamination. It is also noted that dust, and ammonia and hydrogen sulfide air emissions were cause of concerns to citizens, but was also noted as a concern to students in schools as the school district made efforts to curb that pollution at their school sites.

From the findings of this health impact assessment, it is obvious as to why Mesquite residents would have concerns for their health around air quality. And in fact, many of their concerns were validated via the HIA and that helped motivate to action on working on the air quality issues. This same motivation is what led some of these residents to work on a bucket brigade with SWOP a few years later.

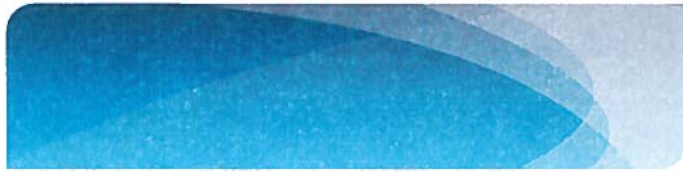


Mesquite residents and members of the Mesquite Community Action Committee pose with an air monitoring bucket right after they finished their air monitoring training.

## Organizing a Bucket Brigade

Community bucket brigades have been the cornerstone of this Breathe in New Mexico Campaign, as it combines reliable scientific data with direct community involvement and cooperation. SWOP identified Mesquite residents who have been concerned about their air quality and was able to have them join our bucket brigade. A partnership was formed with SWOP to conduct air monitoring (see Air Bucket Methodology) and, with the help of Global Community Monitor; community members were trained on the proper collection and handling of air quality data, and how to proceed with analysis, interpretation, and a plan for action. Community group Mesquite Community Action Committee (MCAC) was also an important partner in the campaign as they helped provide on the ground support to the community members during their data collection, while also doing their important social justice work in Southern New Mexico.

First, SWOP met with concerned community members and members of MCAC to talk about their environmental justice issues they've been dealing with for generations. This conversation then led to their concerns around air quality from both the Helena Chemical facility, as well as multiple dairies in the community. This preliminary information also helped us figure out what air sampling was needed and where to be implementing that sampling.



The next step was to then partner with Global Community Monitor to do a technical training for the involved community members. There was a training on how to collect air quality logs, which help provide a narrative of the community member's day-to-day experience. From there residents were trained on how to correctly use the particulate monitor, log the sample, and fill out the chain of custody forms to send with the sample to the assigned lab. We established a calendar with community members to help them schedule their sample set that would be collected over the course of a year. Mesquite residents began their sampling in July of 2012.

The focus of the air quality monitoring in Mesquite was to identify volatile organic compounds (VOC's) and their concentrations that were coming from both the Helena Chemical Facility and the surrounding dairies.

Mesquite residents collected 8 samples with their air quality buckets. The first air sample was collected on July 7<sup>th</sup>, 2012, and the last air sample was collected on October 17<sup>th</sup>, 2013.



One of the many chemical storage units on site at the Helena Chemical facility in Mesquite.

## Mesquite Air Quality Data

### Results of Data Collection

*Trained community volunteers who participated in the Mesquite Bucket Brigade collected air samples from a mixed residential-industrial area in Mesquite and near some of the dairies. These samples were taken over a year's time.*

*What follows is an analysis of our air samples from Mark Chernaik, Ph. D., of Science for Citizens. We worked with Dr. Chernaik throughout the campaign to get scientific analysis of each sample we took, and, at the end of the campaign, he then presented us with this full analysis of all the samples. Along with this, Dr. Chernaik provides his final conclusion on how these samples relate to the negative impacts on public and environmental health in this area.*

### Methods

For analysis of VOC levels, grab samples of air were collected by trained community volunteers by pumping air into a Tedlar® bag which was then shipped to Columbia Analytical Services for measurement of VOC concentrations by EPA Method TO-15 - Determination Of Volatile Organic Compounds (VOCs) By Gas Chromatography/Mass Spectrometry (GC/MS).





Field data, including start and end time of sampling, temperature, meteorological conditions and notable circumstances, was recorded contemporaneously by trained community volunteers, and

## RESULTS - VOC LEVELS

Eight (8) grab samples of air were collected by trained community volunteers over a period of approximately fifteen months. The first air sample was collected on July 7<sup>th</sup>, 2012, and the last air sample was collected on October 17<sup>th</sup>, 2013. What follows is a discussion of levels of specific VOCs that were detected in the air samples and their potential sources.

### *Naphthalene and hydrogen sulfide*

One sample collected on May 30<sup>th</sup>, 2013, directly across Mesquite Park off highway 478 contained both elevated levels of naphthalene (9.2  $\mu\text{g}/\text{m}^3$ ) and hydrogen sulfide (18  $\mu\text{g}/\text{m}^3$ ).

Persons familiar with the sampling location stated:

"This sample was taken in the vicinity of these piles of newly soaked railroad ties that they've been laying out alongside the rail line, because they're about to redo them. I was down there a couple weekends ago and the odor coming from them was very strong."

"We chose that spot because of the proximity to where many of the community congregate at the park and we were told by many folks of the smell. Juan and George joined us the week before and the smell of the railroad ties was really strong. The ties are part of an upgrade that BNSF is doing. It's a project that appears to begin at the El Paso border and goes right into Las Cruces."

According to the U.S. Agency for Toxic Substances and Disease Registry<sup>1</sup>:

"coal tar creosotes are distillation products of coal tar. They have an oily liquid consistency and range in color from yellowish-dark green to brown. The coal tar creosotes consist of aromatic hydrocarbons, anthracene, naphthalene, and phenanthrene derivatives."

Naphthalene is the main component of vapors from creosote used to preservation of wood.<sup>2</sup> Naphthalene is classified by the U.S. EPA as a possible human carcinogen.<sup>3</sup> The naphthalene level of  $\mu\text{g}/\text{m}^3$  is more than 30 times the level that the California Office of Environmental Health Hazard Assessment (OEHHA) has determined is associated with a 1:100,000 excess risk of cancer for a lifetime exposure.<sup>4</sup> This level of naphthalene is also slightly higher than the OEHHA Chronic (annual average) REL for naphthalene of 9  $\mu\text{g}/\text{m}^3$  for the prevention of Respiratory effects (nasal

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<sup>1</sup> <http://www.atsdr.cdc.gov/toxprofiles/tp85-c4.pdf>

<sup>2</sup> Heikkilä, Pirjo R., et al. "Exposure to creosote in the impregnation and handling of impregnated wood." *Scandinavian Journal of Work, Environment & Health* (1987): 431-437.

<sup>3</sup> <http://www.epa.gov/mis/subst/0436.htm>

<sup>4</sup> [http://oehha.ca.gov/air/hot\\_spots/pdf/CPEs042909.pdf](http://oehha.ca.gov/air/hot_spots/pdf/CPEs042909.pdf)





inflammation, olfactory epithelial metaplasia, respiratory epithelial hyperplasia) and three times the U.S. EPA Reference Exposure Level (lifetime average) of  $3 \mu\text{g}/\text{m}^3$  for the prevention of nasal effects (hyperplasia and metaplasia in respiratory and olfactory epithelium, respectively).<sup>5</sup>

A naphthalene level of  $9.2 \mu\text{g}/\text{m}^3$  is below its odor threshold of  $440 \mu\text{g}/\text{m}^3$ , which makes me [same issue as with the others; should we use quotations around this whole entry or maybe a sub-heading to clarify that it's Dr. Chernaik's analysis?] believe that naphthalene levels may have been higher at this sampling location at other times. The sample was collected at 10:35 am on Thursday, May 30th. According to AccuWeather, the high temperature on May 30th was 91 F. I expect that by around 10:35 am, outdoor temperatures were rising rapidly, raising the height of mixing zone into which fugitive emissions from the coated railroad ties would disperse. I expect that levels of naphthalene were significantly higher at other times, such as the evening and very early morning when mixing heights are substantially lower. BNSF Railway may need to exercise greater care when upgrading its railroad ties in order to minimize the public's exposure to naphthalene.



**Overhead map of some of the sample locations in Mesquite.**

The new sample collected on May 30<sup>th</sup> directly across Mesquite Park off highway 478 also contains a hydrogen sulfide level of  $18 \mu\text{g}/\text{m}^3$ , which is above the odor threshold for hydrogen sulfide and above the OEHHA chronic (annual average) REL for hydrogen sulfide of  $10 \mu\text{g}/\text{m}^3$ .<sup>6</sup>

It is also possible that creosote-soaked railroad ties could be the source of ambient hydrogen sulfide. According to the Material Data Safety Sheet for creosote, a portion of coal tar includes sulfur-containing polycyclic hydrocarbons and "elevated temperatures during long-term storage and/ or transportation [of creosote] may release hydrogen sulfide."<sup>7</sup>

One sample collected on February 19<sup>th</sup>, 2013, near the Gorzeman Dairy on Mesquite Drive contained a hydrogen sulfide level of  $7.5 \mu\text{g}/\text{m}^3$ . This is just above the Method Reporting Limit of  $7 \mu\text{g}/\text{m}^3$ . This level is above the odor threshold for some individuals, and exceeds the U.S. EPA Reference Concentration of  $2 \mu\text{g}/\text{m}^3$  for a lifetime exposure.<sup>8</sup>

Dairies are known sources of hydrogen sulfide, at which organic waste can decompose anaerobically in wastewater lagoons, giving rise to hydrogen sulfide gas. The Google Earth satellite image of this sampling location (see above) shows a number of lagoons/ponds at which anaerobic decomposition of organic waste may be occurring. Further air sampling at this location but in closer proximity to

<sup>5</sup> [http://oehha.ca.gov/air/hot\\_spots/2008/AppendixD3\\_final.pdf#page=113](http://oehha.ca.gov/air/hot_spots/2008/AppendixD3_final.pdf#page=113)

<sup>6</sup> [http://oehha.ca.gov/air/hot\\_spots/2008/AppendixD3\\_final.pdf#page=121](http://oehha.ca.gov/air/hot_spots/2008/AppendixD3_final.pdf#page=121)

<sup>7</sup> <http://www.kellysolutions.com/crenewal/documentsubmit/KellyData%20CV%20pes01ade%20MSDS%2061468%2061468-9%2061468>

<sup>8</sup> CREOSOTE, PETROLEUM SOLUTION, PRESSURE APPLICATIONS 11-13-2007 10:17:11 AM.pdf

<sup>8</sup> <http://www.epa.gov/iris/subst/0061.htm>



these lagoons/ponds might register higher levels of hydrogen sulfide in ambient air, especially when the smell of “rotten eggs” is detectable.

### *2,4-Dimethylheptane (tripropylene)*

Three of the six samples from near the Helena Chemical Company facility in Mesquite contained levels 2,4-dimethylheptane as tentatively identified compounds at levels ranging from 22 to 120  $\mu\text{g}/\text{m}^3$ . 2,4-Dimethylheptane is also known tripropylene (or sometimes propylene trimer).<sup>9</sup> Tripropylene can be used as a surfactant, but it is not on EPA's list of pesticide inert ingredients.<sup>10</sup> The repeated presence of tripropylene near the Helena Chemical Company facility is an unusual result (it has not been detected in air samples I have examined in projects from more than a dozen other locations throughout the United States). However, I lack a plausible explanation for why tripropylene was repeatedly found near the Helena Chemical Company facility. Fortunately, tripropylene possesses relatively little toxicity and human exposure to the levels found near the Helena Chemical Company (22 to 120  $\mu\text{g}/\text{m}^3$ ) would not be associated with human health effects.

### *Other VOCs*

Moderate amounts of ethanol (6 samples), toluene (5 samples), trichloroethane (1 sample) and  $\alpha$ -pinene (1 sample) were detected in air samples from Mesquite, but levels were below short-term and long-term health-based standards for exposure to these VOCs.

## Community Improvements

### *Where Are We Now?*


One of the biggest issues facing Mesquite residents regarding air quality is that fact that the Helena Chemical Company facility in Mesquite is still operating without an air permit. Yet residents are still living daily with the impacts of breathing in VOCs from this facility. There is an urgent need to get this issue remedied, as this facility had multiple air permit violations before the air permit was rescinded.

There are community members working to ensure that the dairies are doing everything in their power to prevent groundwater contamination in the community. The dairies also need to be held accountable for the volatile organic compounds that they are releasing into the community as a result of their concentrated animal feed operations they are running. At the moment, community members are pursuing a nuisance lawsuit against the dairies for the many of the nuisances they cause, including: flies, mosquitoes, smells, and air quality impacts.

Community members also have some recommendations on how to improve their quality of life, while having to deal with these air quality issues. These include:

<sup>9</sup> [http://www.ihc.com/products/chemical\\_planning\\_celi\\_nonen-propylene-trimer.aspx](http://www.ihc.com/products/chemical_planning_celi_nonen-propylene-trimer.aspx)

<sup>10</sup> [http://www.epa.gov/oprd001/merts/merts\\_list11bname.pdf](http://www.epa.gov/oprd001/merts/merts_list11bname.pdf)

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- Force the Helena Chemical Company facility to relocate away from residential areas and schools. Establish boundary zones around residential areas, as well as schools and community centers in order to prevent more polluting industry from locating around these sensitive areas.
  - Ensure that the health of children and the elderly are paid particular attention to. This includes ensuring that practices at schools to reduce the air pollution that reaches school children.
  - Help to achieve the community vision of making the area in the middle of town a plaza. This would include removing the Helena facility and building out infrastructure around the church to create a plaza that would be inviting to community and provide a space for the community to gather.
  - Provide more air monitoring to the community at the Helena facility and the dairies in order to provide

## Policy Improvements

On top of getting Helena to get their air permit re-established, there is work to be continued on getting the Bad Actor bill passed. This policy has been introduced a few times at the New Mexico State Legislature and unfortunately has not passed as of yet. Yet this bill is very important in that it would hold chronic polluters accountable until they clean up their act. Getting the Helena facility to get their air permit re-established and then using this policy to hold them accountable if they continue to violate their air permit would help tremendously to making this company stop their polluting ways in Mesquite.

Another policy that Mesquite residents have supported is the Consolidated Environmental Review Act. This policy would insert a review into the permitting process that would look at the human and environmental impacts on a community from pollution coming from permitted facilities. It would also look at the pollution impacts on a community in total rather than look at them by a source by source basis. This policy would provide more data to community members on the impacts of the polluting sources already in their community, as well as the impacts of other sources trying to move in the community.

Unfortunately it is difficult to get environmental and health friendly legislation passed at the state level in New Mexico. Having a Legislature full of armies of industry lobbyists and industry friendly legislators often has us facing a jobs versus health battle, yet we know we are pursuing good legislation for the health benefits of underrepresented communities.

SWOP will continue to work with Mesquite Community Action Committee and community members of Mesquite to try to identify and develop policies that will help to improve the quality of life in Mesquite. We cannot stop fighting for people's right to clean air and water.



## Moving Forward

Through the community based bucket brigade in Mesquite we have proven that many volatile organic compounds have escaped off site and into the community of Mesquite. The health studies done also point to the fact that many of the health issues that residents of Mesquite, especially children, are facing can be attributed to the industry operating in the community. It is essential that elected officials and regulatory bodies work with the citizens of Mesquite to help improve their quality of life by helping to improve their air quality. We hope that this citizen bucket brigade and the data we've collected with the community will serve as motivation to help push for the improvements.