

Testimony of Wilma Subra

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“ EPA’s IRIS Program: Reviewing its Progress and Roadblocks Ahead”

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Thank you Madams Chairwomen and distinguished Members of the Subcommittees for the opportunity to testify today. My name is Wilma Subra. I am President of Subra Company (formed in 1981) and Technical Advisor to Louisiana Environmental Action Network , a non-profit formed in 1986. I have provided technical assistance to community groups throughout the United States and in some foreign countries, dealing with environmental and human health issues, for more than 52 years.

I have served on a number of EPA advisory panels representing the communities perspectives. I served for seven years as Vice-Chair of the Environmental Protection Agency National Advisory Council for Environmental Policy and Technology (NACEPT), five years on the National Advisory Committee of the U. S. Representative to the Commission for Environmental Cooperation and six years on the EPA National Environmental Justice Advisory Council (NEJAC) where I served as co-chair of the Cumulative Risk and Impacts Working Group of the NEJAC Council, and chaired the NEJAC Gulf Coast Hurricanes Work Group. In 2011, I chaired the Environmental Protection Agency Technical Workshop for the Hydraulic Fracturing Study on Chemical and Analytical Methods. I participated in the EPA Shale Technical Roundtables on Water Acquisition, Chemical Mixing, and Well Injection in November 2012. I co-chaired the EPA Shale Analytical Chemical Methods Workshop in February 2013.

The Goal of Louisiana Environmental Action Network is to foster cooperation and communication between individual citizens and corporate and government organizations in an effort to assess and mend the environmental problems in Louisiana. I educate and empower community members to be able to respond to, address and reduce their health hazards, reduce their exposure risk and improve their quality of life.

In the early days of my career of working with impacted communities, there was a lack of technical information available on which to evaluate and base risk, impacts to human health, exposure to toxic chemicals and better information that was mostly not publicly available, nor easily accessible.

From the beginning of the publicly available IRIS assessment program, the information provided by IRIS has been extremely valuable in identifying health hazards of chemicals and evaluating exposure situations in impacted communities.

The toxicology information provided a complete evaluation of each chronic pathway of exposure and resulting risks. This information is critical in providing community members accurate and focused exposure and risk information per chemical.

### **Cumulative Risk**

The IRIS assessment information is also available on multiple chemicals and provides necessary exposure pathways and risk on which to evaluate cumulative impacts and risk. No matter what the situation, impacted community members are never exposed to just a single chemical. The community may be impacted by multiple major toxic chemical components and usually a whole host of other chemical contaminants. Focusing on only one contaminant, results in the under estimation of exposure, risk and associated health impacts. This information is critical to identifying methods and procedures to reduce community member exposure and

improve the health of the communities. The IRIS assessments are key to providing all available information and data to inform methods of reducing community members exposure and educate community members with the data they need to have a positive path forward to improve their health and quality of life.

The IRIS assessments provide the information that I need to work with the negatively impacted communities to identify exposure risk and develop methods to reduce their exposure and address and improve their health outcomes.

Toxicology was in its infancy and animal cancer studies were being performed on only a few chemicals when I began working with negatively impacted communities. The progress over the years has provided better more complete data and methods of addressing exposure, risk and reducing risk. IRIS assessments are a very important contribution to that process.

NATA Assessments, based on IRIS assessments, were released on December 2015 for Chloroprene and August 2018 for Ethylene Oxide. The community members living in the zones negatively impacted by industrial facilities releasing these two chemicals into the air are also being exposed to as many as 45 additional chemicals from the same industrial source and/or facilities adjacent to and in the immediate area as the sources of Chloroprene and Ethylene Oxide.

The pathways and quantities of exposure, risk and health impacts based on a single chemical and/or from a single source are severely lacking. Community members risk has to include all chemical, all pathways of exposure, and all concentrations in all media in order to adequately identify the risk and develop pathways forward.

I consistently receive desperate request from communities who are “sick and tired of being sick and are desperately seeking answers to why they are sick and what is causing them to be sick.” Various data bases,

environmental, conservation and health agency files provide who and what may be responsible for causing emissions, releases and contaminants to the environment. Once the data is accumulate, the IRIS Assessment data bases are the next critical source to identify pathways of exposure, risk and toxicity. Thus the IRIS data base system is critical to being able to help community members deal with and address their chemical exposure, risk and health issues.

### **Denka/DuPont - Chloroprene**

The NATA 2011 Assessment of Chloroprene – released in December 2015, focused on Chloroprene at the DuPont Pontchartrain Works facility, purchased by Denka in November 2015. Chloroprene is and has been released into the air since 1969 (50 years of air emissions of Chloroprene). Based on the IRIS Assessment, a value of 0.2 ug/m<sup>3</sup> was recommended. EPA air monitoring at 6 locations around the Denka facility has provided ambient air concentrations since May 2016.

Modeling by Denka has established the extent of air concentrations in excess of 0.2 ug/m<sup>3</sup> out from the Denka facility. The area covers the entire parish (County) of St. John the Baptist and beyond.

Census tract data from the 2011 NATA data base included cancer risk for each census tract in St. John the Baptist parish. The highest cancer risk census tracts are the two census tracts on which the Denka facility is located.

Urine samples collected from adults and children in St. John the Baptist Parish identified Chloroprene metabolites in each individual tested.

Based on ambient air concentrations of Chloroprene in the community and the Chloroprene metabolites in the community members urine, a completed pathway of exposure has been demonstrated.

The state of Louisiana Department of Environmental Quality signed an Administrative Order on Consent in January 2017 with Denka for Denka to

install four air emissions control technologies in 2017. Since that time, the ambient air concentrations of Chloroprene have trended downward somewhat, but are still in excess of 0.2 ug/m<sup>3</sup> by up to hundreds of times.

Without the IRIS Assessment, the community would have been unaware of their risk, the associated chronic health impacts (cancer of the liver, lungs, kidneys, colon and leukemia) and their continued exposure based on the EPA ambient air monitoring program. Thus the IRIS Assessment provided critical information to the community members in St. John the Baptist Louisiana.

The amount of information constantly being generated has made it necessary for me to conduct community workshops once every two weeks to keep the community members up to date on the ongoing developments.

### **Ethylene Oxide**

The NATA 2014 assessment was released in August 2018. Information on the IRIS assessment has been included in the St. John the Baptist workshop community meetings and workshops have been provided to impacted community members in other areas of Louisiana where 11 of 13 industrial facilities releasing Ethylene Oxide are located. EPA considers a cancer risk due to Ethylene Oxide over 100 per million individuals a concern. All of the census tracts in St. John the Baptist Parish exceed 100 per 1 million individuals risk.

Once again the IRIS Assessment is critical to providing information to the negatively impacted, primarily Environmental Justice, communities and providing information to community members in other states where Ethylene Oxide is being released into the air.

## **Impacts of Formaldehyde Released into the Environment**

Walk into a biology laboratory in high school or a biology building in college and you will immediately be greeted with a very strong distinct pungent odor of Formaldehyde. The gas Formaldehyde is dissolved in water to form formalin and formalin is used to preserve tissue.

Formaldehyde is a precursor to many other chemical compounds produced by industrial facilities. In Louisiana 31 major industrial facilities release more than 13 million pounds of Formaldehyde into the environment each year, and more than 340,000 pounds into the air each year. These industrial facilities consist of petrochemical plants, fertilizer production facilities, pulp and paper mills and plywood mills. The facility in Louisiana releasing the largest quantity of Formaldehyde into the environment is the Monsanto facility in Luling. The facility manufactures pesticides and other agricultural chemicals. It manufactures all the components of Roundup utilized in the United States. The Monsanto facility releases 900 pounds of Formaldehyde into the air from fugitive sources and 14,000 pounds of Formaldehyde from stacks sources on a yearly basis. 3,400 pounds of Formaldehyde are discharged into the Mississippi River on an annual basis.

In Texas 77 major industrial facilities release more than 819,000 pounds of Formaldehyde into the environment each year. Of that quantity, more than 416,000 pounds are released into the air. The industrial facilities releasing Formaldehyde consist of petrochemical plants, petroleum refineries, resin manufacturers, waste treatment facilities and medical production facilities.

In the United States, 727 major industrial facilities release more than 19 million pounds of Formaldehyde per year. Of that quantity, more than 4.8 million pounds are released into the air each year. Overall, Louisiana is the largest released of Formaldehyde into the environment in the United States.

The releases of Formaldehyde into the environment from these major industrial facilities and other smaller types of facilities result in community members living on the fence line, in close proximity to and in the vulnerable zone surrounding each of these facilities and being exposed to Formaldehyde as it is continually being released into the environment in which they live.

### **Impacts of Formaldehyde Exposure to Impacted Communities**

The following are a few examples of community impacts as a result of Formaldehyde Exposure.

#### **Natchitoches Plywood Mill**

A plywood mill in Natchitoches, Louisiana was causing the adjacent Environmental Justice community members to have negative health impacts as a result of the operation of the mill. Community members were experiencing eye, nose, throat and skin irritation and severe respiratory impacts. Suspecting potential air emissions from the adjacent plywood mill, air samples were collected and analyzed for Volatile Organic Compounds. One of the major chemicals detected in the air samples were Formaldehyde. Meeting with the plywood mill management, it was determined that the resins used in the plywood process contained Formaldehyde. As part of the manufacturing process, the plywood was heated to cure the resins. The major source of Formaldehyde air emissions was determined to be from that process. The company volunteered to replace the resins with non-Formaldehyde based resins.

As a result of the change in resins, the negative health impacts being experienced by community members was drastically reduced.

## **Georgia-Pacific Crossett Arkansas**

Georgia-Pacific had three mills in Crossett, Arkansas. The facilities consisted of a paper mill, chemical plant and plywood plant. The plywood plant has been shut down. The chemical plant manufactured Formaldehyde. The plywood plant, paper mill and chemical plant released Formaldehyde into the air, which caused very negative health impacts to the community members (primarily Environmental Justice members). The community of Crossett (primarily Environmental Justice) is located completely around the Georgia-Pacific facilities on the fence line.

The paper mill also released large quantities of Hydrogen Sulfide into the air and into the waste water treatment system which was located in the Environmental Justice community of West Crossett and added to the communities negative health burdens.

Based on working with members of the Crossett community over many years, their odor complaints always centered around rotten egg/Hydrogen Sulfide and Formaldehyde air emissions and their health symptom corresponded to the acute health impacts associated with Formaldehyde and Hydrogen Sulfide. Air sampling documented the presence of excessive concentrations of Formaldehyde and Hydrogen Sulfide in the air in association with the community odor complaints.

Over the last 20 years, data indicates that the Georgia-Pacific operations in Crossett released more than 876,000 pounds of Formaldehyde into the air. The annual quantities of Formaldehyde ranged from 20,052 pounds per year to 101,330 pounds per year. Over the last three years, the air emissions of Formaldehyde were in the range of 20 to 24.6 thousand pounds per year. The facility no longer manufactures Formaldehyde but continues to receive, store and utilize Formaldehyde in their processes.



Based on the air emissions released from the Georgia-Pacific facilities and the very negative health impacts experienced by the community members, EPA Region 6 requested the National Enforcement Investigations Center (NEIC) to perform a Multimedia Compliance Investigation of the Georgia-Pacific Crossett Paper Operations and Chemicals facility in Crossett, Arkansas.

Both Multimedia Compliance Investigations were performed from **February 3, 2015 through February 12, 2015**, at the respective facilities.

The report of the findings and observations for the Georgia-Pacific Chemicals facility was dated **July 15, 2015** and for the Georgia-Pacific Crossett Paper Operations, **August 14, 2015**.

On **November 9, 2015**, the reports were released to the public.

I compiled a summary of the results for each facility based on:

**-Areas of Concern** – potential problems or activities that could impact the environment or result in future or current noncompliance

**-Areas of Noncompliance**

The regulatory authorities included in the investigations included:

**-Clean Air Act** – Air Emissions

**-Clean Water Act** –Wastewater Discharges

**-Resource Conservation and Recovery Act** – Hazardous materials and Waste. Georgia-Pacific Chemicals and Georgia-Pacific Crossett Paper Operations are both large quantity generator of hazardous waste.

The **Georgia-Pacific Crossett Paper Operations** in Crossett, Arkansas consist of:

-Kraft Pulp Mill

-Bleach Plant

- Processes for hard wood and softwood (pine)
- 8 Paper machines
- 2 Paper extruding machines

The **Georgia-Pacific Chemicals, LLC** facility in Crossett, Arkansas manufacturing processes consist of:

- Crude tall oil fractionation with resin reaction kettles – no longer in operation
- Liquid resin manufacturing - spray dry resin manufacturing (amine-phenolic resin process)
- Urea formaldehyde process unit – unit idled in September 2012. Formaldehyde is shipped from off site, stored in formaldehyde tanks on site that are vented to regenerative thermal oxidizer (RTO)

### **Air Emissions from Georgia-Pacific Crossett Paper Operations**

Georgia-Pacific states there are no gases from any affected portion of the Kraft pulp mill in excess of 5 ppm total reduced sulfur being discharged into the atmosphere. However, the inspectors observed visible defects where gases were released to the atmosphere from the capper valves on five batch digesters and from brown stock washers.

Brown stock washers from the pine and hardwood pulping lines are not vented to a control device.

The Betsy tank which collects filtrate from the brown stock washer in the pine pulping line is vented to the atmosphere.

Georgia-Pacific stated their existing emission calculations and factors concerning Hazardous Air Pollutant concentrations in the pulping process, condensate collection and destruction systems need to be updated.

Gases containing Total Reducing Sulfur were released to the atmosphere from the batch digesters. On a walk through of the digester system, NEIC inspectors observed vapors emanating from the top of capper valves on five batch digesters. Inspectors also observed vapors emanating from the flange on the side of the #3 digester capper valve. GP asserted that because the digesters are located within a building and the gases are being emitted into the building, the standards are being met. However, it appears that the building is equivalent to the atmosphere in this situation.

The total Hazardous Air Pollutants from GP's batch digesters are not enclosed and vented into a closed-vent system, and are not routed to a control device.

The total Hazardous Air Pollutants from the GP-2 and GP-3 washers are not enclosed, not vented into a closed-vent system, and not routed to a control device.

The total Hazardous Air Pollutants from the Betsy tank, a filtrate tank, are not controlled and are vented to the atmosphere.

The total Hazardous Air Pollutants from the pine liquor fill storage tank and filter feed tank and filtrate tanks, are not controlled and are vented to the atmosphere.

GP did not promptly address findings from the 2010 compliance audit because the same findings were found in the 2013 compliance audit.

### **Air Emissions from the Georgia-Pacific Chemicals Facility**

GP Chemicals' leak detection and repair (LDAR) contractor, Team Industrial Services, is not using the appropriate detector to monitor for formaldehyde in the process area. Team has been GP Chemicals'

contractor since the inception of the facility's LDAR program. GP personnel called Team and confirmed that TEAM has always used a flame ionization detector (FID) to conduct all monitoring. Formaldehyde is not detected by an FID at a response factor less than 10. Therefore, no leaks are detected even if components in the LDAR program were leaking.

NEIC received a copy of GP Chemicals' current LDAR list of all equipment containing formaldehyde. As of February 12, 2015, there were 78 pieces of equipment that contain formaldehyde. Each piece is identified as being in gas vapor service.

### **Georgia-Pacific in Crossett, Arkansas Settles EPA Claims of Violations of the Clean Air Act for:**

**\$600,000 Civil Penalty**

**\$2.9 million in Mitigation Project**

**\$2 million in Supplemental Environmental Projects**

By Wilma Subra [Subracom@aol.com](mailto:Subracom@aol.com)

On December 14, 2018, the US Environmental Protection Agency (EPA) announced a settlement with Georgia-Pacific Chemicals (Chemical Manufacturing Facility) and Georgia-Pacific Consumers Products (Pulp/Paper Manufacturing Facility) in Crossett, Arkansas for violations of the Clean Air Act that were documented in an EPA National Enforcement Investigation Center (NEIC) Inspection that occurred in 2015 at the Georgia-Pacific paper and chemical products facilities in Crossett.

EPA Region 6 had requested the National Enforcement Investigations Center (NEIC) to perform a Multimedia Compliance Investigation of the Georgia-Pacific Crossett Paper Operations and Chemicals Facility in Crossett, Arkansas.

Both Multimedia Compliance Investigations were performed by the NEIC from **February 3, 2015 through February 12, 2015**, at the respective facilities.

The NEIC report of the findings and observations for the Georgia-Pacific Chemicals facility was dated **July 15, 2015** and for the Georgia-Pacific Crossett Paper Operations, **August 14, 2015**.

On **November 9, 2015**, the reports were released to the public. On December 2, 2015, Wilma Subra of Louisiana Environmental Action Network (LEAN) presented the information and results from the two NEIC reports of the Georgia-Pacific facilities to the Crossett Concerned Citizens for Environmental Justice at the Living Word Church of God in Christ in Crossett, Arkansas.

## **Settlement Requirements**

The December 14, 2018 settlement required Georgia-Pacific to pay: \$600,000 in Civil Penalties - \$300,000 to the United States and \$300,000 to Arkansas Department of Environmental Quality (ADEQ).

\$2.9 million in a Mitigation Project to reduce Hydrogen Sulfide emissions and odors from the wastewater discharge.

\$2 million in three Supplemental Environmental Projects to reduce the potential for Hydrogen Sulfide air emissions from the Georgia-Pacific Wastewater Process (2 projects) and an air monitoring project for Hydrogen Sulfide along the fence line of the facilities, for at least three years.

The 2015 EPA National Enforcement Investigation Center (NEIC) inspections of the two Georgia-Pacific Crossett facilities on adjoining properties, identified the following:

-A lack of air pollution controls, required under the Clean Air Act's New Source Performance Standards (NSPS) and the National Emissions Standards for Hazardous Air Pollutants (NESHAP) at the Chemical facility and at the Pulp/Paper facility, of the two wood pulp washers at the facilities.

Georgia-Pacific is required by the terms of the settlement to:

- Install the appropriate pollution controls on the washers.
- Update leak-control and compliance monitoring procedures.
- Conduct emissions and performance testing on other control systems.

The required measurements under the terms of the settlement are designed to achieve reductions of **hazardous air pollutants** released from the two facilities.

The settlement will further efforts by EPA and ADEQ to address residents' health and odor complaints stemming from **Hydrogen Sulfide** emissions from the two Georgia-Pacific facilities.

The measures required by the settlement are designed to achieve reductions in hazardous air pollutants released from the two Georgia-Pacific Crossett facilities and the installation of \$2.9 million in a Mitigation Project to reduce Hydrogen Sulfide emissions and odors from the wastewater discharges.

Wilma Subra of LEAN has provided expert technical assistance, hydrogen sulfide air monitoring, wastewater sampling projects, as well as evaluation of data and presentations to community members, local, state and federal environmental and health agencies, for many years to and on behalf of the Crossett Concerned Citizens for Environmental Justice (CCCEJ).

LEAN's Board President, Cheryl Slavant, the Ouachita Riverkeeper, has interacted with the Crossett Concerned Citizens for Environmental Justice(CCCEJ) for many year and has focused on projects on the Crossett facility wastewater discharge plume as it is discharged into Coffee Creek and eventually into the Ouachita River.

Tulane Environmental Law Clinic has filed a Title VI complain with the EPA Administrator and EPA Office of Civil Rights against continuing the NPDES wastewater discharge permit for Georgia-Pacific.

The wastewater issues involved in the EPA settlement include the treatment of wastewater from both the Georgia-Pacific Pulp/Paper Operations and the Georgia-Pacific Chemical Plant in Crossett. The City of Crossett wastewater is handled in the Georgia-Pacific wastewater treatment system.

As a result of working with the community of Crossett, the Arkansas Department of Environmental Quality and the Environmental Protection Agency and having the technical information on Formaldehyde available from IRIS, the negative health impacts experienced by the Crossett community will be decreasing and their quality of life should be improving.

### **Prevented Communities from Being Exposed to Formaldehyde**

A non-profit self help organization that was instrumental in helping poor, disadvantaged community members to become first time home owners, was looking into housing units produced by a local fabrication company. On reviewing all of the data and specifications it became apparent that the fabrication company was using plywood, particle board and fiberboard that was manufactured with Formaldehyde based resins. Structures constructed with this type of material were known to off gas Formaldehyde vapors at unacceptable levels within the structures and could result in negative health impacts to residents, known to be associated with Formaldehyde.

The information was providing to the non-profit and then a meeting was set up with the fabrication company. After lengthy interaction, the fabrication company indicated they would have to consider whether they could change to plywood, particle board and fiber board that were not constructed with Formaldehyde resins. The fabrication company declined to change to utilizing products made from non-Formaldehyde resins. Thus, the non-profit continues to construct homes without Formaldehyde based resins in any of their plywood, particle board and fiber board materials. As a result the first time home owners were not exposed to Formaldehyde.

### **Hurricanes Katrina and Rita and FEMA Trailers**

Hurricane Katrina struck the northern coast of the Gulf of Mexico in the states of Louisiana, Mississippi and Alabama on August 29, 2005. Severe damage and destruction occurred all along the coastal areas. Less than a month later, on September 24, 2005, Hurricane Rita struck the coastal areas of Texas, Louisiana and Mississippi. As a result of these two hurricanes a large population of community members, particularly in the greater New Orleans area, were relocated to other parts of the United States. A large part of the remaining population, that had totally lost their homes, were eventually provided FEMA trailers, in which to live.

The FEMA trailers were constructed in response to the needs for temporary housing as a result of the hurricanes. A large number of individuals, as soon as they moved into their FEMA trailers, began complaining of headaches, runny noses and nose bleeds. The symptoms then increased to include burning eyes and throats, nausea and respiratory distress and chronic respiratory problems. When they complained they were told to air out the trailer when first going inside.



Working with the Sierra Club in Mississippi, formaldehyde testing badges were provided to FEMA trailer occupants along the coastal area of Mississippi. In May 2006, 32 FEMA trailers were tested. Thirty of 32 trailers had Formaldehyde levels over the EPA acceptable level. In July 2006, a total of 44 trailers were tested for Formaldehyde. All but four FEMA trailers tested higher than 0.1 ppm for Formaldehyde. EPA considered 0.1 ppm to be an "elevated level of Formaldehyde." The highest concentration of Formaldehyde detected was 0.34 ppm. FEMA established a threshold of 0.016 ppm.

Based on further investigation, a Phenol Formaldehyde adhesive was used to construct composite wood and plywood panels used to construct the FEMA trailers. The off gassing of the Formaldehyde resulted in severe health impacts to individuals living in the FEMA trailers that were known to be associated with exposure to Formaldehyde. It was estimated that 120,000 families lived in FEMA trailers as a result of hurricanes Katrina and Rita.

## **Conclusion**

The information in IRIS Assessments is critical to evaluating situations of community exposure, concentrations, pathways of exposure, health impacts and risk. The IRIS information is an important base of data to convey to community members their risk, sources of chemical emissions, cumulative impacts of chemicals the community members are being exposed to, associated health impacts and establishing strategies to reduce exposure and improve health outcomes.

The IRIS program is extremely important to provide information to exposed community members about their level of risk and the associated health conditions.