

CHEMICAL CONTAMINATION IN FENCELINE COMMUNITIES

Pensacola, Florida: Living Next Door to Mount Dioxin And a Chemical Fertilizer Superfund Site

By Steve Lerner

Margaret L. Williams was raised at 27 East Pearl Street in Pensacola, Florida in a house next to the railroad tracks and wedged between two heavily polluting factories. On one side was the Agrico Chemical Company, a chemical fertilizer plant where her father worked. On the other side stood the 26-acre Escambia Treating Company (ETC), where wooden utility poles, railroad ties, and foundation pilings were soaked and pressure treated with creosote or pentachlorophenol (PCP). Both of these facilities have since been declared federal superfund sites.



Margaret Williams
Photo: Steve Lerner

Pollution from the plants coated everything, recalls Williams. The screens on the windows of her childhood home were caked in yellow sulfur released from the fertilizer plant and water from local wells was oily. On some days, while walking to school, Williams had to shield her eyes with her hands and cover her nose and mouth with a kerchief against the dust and odors. Worst of all, her home was like an oven in the summer because her parents closed the windows to keep out the strong chemical fumes.

Flooding was also a problem. The wood treatment plant failed to install drainage pipes that would divert storm-water run off from carrying pollution from the grounds of their facility downhill into neighborhood yards and houses. Some former employees of ETC tell of being dispatched to Rosewood Terrace after a heavy downpour to “pump out creosote and PCP that had pooled in the yards and distribute sand over the contaminated areas,” Williams reports.¹

In the 1940s and 1950s her father had it worst of all. He worked in the “bag room” at Agrico where chemical fertilizers were packaged for shipment. Since no respirator, goggles, or boots were supplied by management to protect him from the dust and chemicals he took his own precautions. He wore a bandana over his nose and mouth and wrapped burlap bags over his shoes to keep the chemicals on the floor from damaging his feet.

Burlap bags were also used as protective footwear at the Escambia Treating Company plant. One former worker described climbing in the long troughs filled with creosote and spinning the poles with his feet until the wood was completely saturated in the black tar-like substance that keeps them from rotting. After a batch was finished the wastewater contaminated with creosote was dumped into an unlined hole in the ground where, over the years, it seeped into the groundwater. Residents in the surrounding homes, who depended on shallow wells, had to pump the water for several minutes to clear the oil substance before getting relatively clean water. Years later, their were wells capped by county officials and city water was piped in. “No one told us at the time that the reason they capped the wells was that the groundwater was contaminated,” Williams notes. “We just thought they were improving the system,” she recalls.

Pouring Wastes in an Earthen Pit

An EPA document describes the process at the Escambia Treating Company (ETC) in some detail. Starting in 1944 yellow pine logs were shipped to the plant where they were de-barked,

formed, dried, pressure impregnated with preservatives, and stored before being shipped. From 1944 to 1970 coal-tar creosote (the black, sticky stuff that burns your skin and eyes) was used. In 1963, ETC started experimenting with a new wood preservative called pentachlorophenol (PCP), a strong biocide that kills fungi, insects and marine organisms that can destroy untreated wood. Unfortunately, PCP is often contaminated with dioxin, one of the most highly toxic chemicals in the world. Shipped to the plant in a crystalline form, the PCP was dissolved in heated number 6 diesel fuel before being used to pressure treat the wood. From 1970 until 1982 when the plant closed, PCP was used in place of creosote. There is some evidence that a third wood-preserving process, copper chromate arsenate, was also used to a limited degree.

From the 1940s to the mid 1950s contaminated wastewater from the plant was sent to an unlined earthen impoundment area – a hole in the ground. After the mid 1950s an oil/water separator was installed to recapture some of the preservatives. A hot pond of contaminated wastewater was sprayed by giant showerheads into a cold pond. In the process some of the organic constituents of the waste turned into vapor. The water that was separated out was dumped into the Pensacola sewer system, while the contaminated liquid run-off was diverted into a series of concrete separation basins where some of the wood-treating preservatives were recaptured for re-use. The contaminated wastewater from this stream was shunted to an impoundment known as “the swimming pool” which had a capacity of 225,000 gallons. There, the hot Florida sunshine evaporated some of the contents before the rest was flushed into the sewer system. This waste management process exposed residents in the neighborhood to more fumes and put a strain on the municipal sewage treatment plants. Waste management at ETC continued in this fashion for over 40 years before the EPA finally began its inspections and began to cite ETC for violations in 1985.²

“Wood preservative treatment facilities have contributed greatly to the ranks of Superfund sites,” notes the website of Beyond Pesticides, an environmental group based in Washington, D.C., which has long warned of the danger to human health and the environment of pesticides and promoted alternatives to their use. Pentachlorophenol has been found in 314 of the 1,300 Superfund sites. “So much illness has resulted from worker exposure to pentachlorophenol that it is seen as a significant source of income for attorneys pursuing toxic torts,” writes the group’s executive director, Jay Feldman.³

Illness in the Neighborhood

The ground surrounding the homes of Margaret Williams and her family was later found to be heavily polluted with dioxin and polyaromatic hydrocarbons (PAHs); the banned pesticide, dieldrin; and arsenic. In fact, the contamination in her neighborhood was the worst ever found off-site next to a wood treatment plant, notes Wilma Subra, a chemist who works with grassroots groups dealing with contamination problems. “This is the worst wood treating site for impacts to public health,” she continues. Blood sampling of former ETC workers and residents who lived near the plant were found to have “elevated levels of dioxin in their blood in excess of the general population” 25 years after the plant closed, Subra observes. The testing was performed by the University of West Florida’s Center for Diagnostics and Bioremediation and the analysis for dioxin was performed by Analytical Perspectives in Wilmington, NC.⁴

While it is impossible to prove that the remarkable number of illnesses and early deaths in Williams’ family were caused by exposure to these chemicals, it does seem likely. Both Williams’ mother and father died of cancer, as did two of her uncles. The family also suffered from respiratory problems: one of her uncles had to be taken out on the porch every evening and thumped on the back to clear his lungs. Williams’ daughter recalls that her aunt had an enlarged tumor that made it difficult for her to sit and her life a misery. It was hard to find a house in the neighborhood where someone in the family had not died of cancer, she adds.

The size of the cancer cluster in the neighborhoods near the plants was never tallied by professionals. However, anecdotal evidence suggests it was substantial. Lisa Wiggins, 27, who also lived on East Pearl Street with her three children, knew many residents in her immediate neighborhood that died of cancer. "The lady across the street, her mama died of cancer. The man up the street, him and his brother died of cancer. The lady on the corner, she died of cancer.... I know if we stay here, exposed to these kinds of chemicals, I mean we are not going to have a chance," she told a reporter.⁵

Also striking is the fact that many residents who lived near the plants suffered illnesses that were identical to those experienced by the men who worked at the plants, Williams observes. The choking fumes and poisonous dust from the plants caused "cancers, heart disease, immune disorders, liver disease, thyroid dysfunction, a large number of respiratory problems, persistent skin rashes, burning eye irritation, and the exacerbation of pre-existing conditions," says Williams.

Reproductive disorders were also widely experienced by women in the Rosewood Terrace, Oak Park, Goulding and Clarinda Triangle neighborhoods near the plants. Williams' mother had four miscarriages before she finally gave birth to a daughter who lived. Williams, in turn, had two children who died – one a stillbirth and the other died of respiratory problems three months after being born. "Many of the young girls had hysterectomies before they were 20, notes Williams. Her own daughter was one of them.

Opening Pandora's Box

The contaminated wells capped in Williams' neighborhood were just early signs of deeper problems. The Escambia Treating Company site is located on a high point in Pensacola atop a very shallow sand and gravel aquifer. This made it a perfect source-point for a large plume of groundwater contamination, which, to date, remains un-remediated. The U.S. EPA now recognizes that the wood-treatment plant contaminated 96 acres of "impacted land" and generated a plume of contaminated groundwater that extends 1.3 miles downhill to Bayou Texar.⁶ This is hardly surprising given that "few environmental precautions were taken," during the wood treatment plant's nearly 40 years of operation, observes Williams. The owners of ETC, who included the former mayor of Pensacola, likely knew that regulators were closing in and that a day of reckoning was at hand. It appears more than just coincidence that just before it closed in 1982, the owners of ETC sold the plant to their workers without disclosing the environmental liabilities. Then the company went bankrupt leaving it up to taxpayers to foot the bill for the cleanup.

ETC was abandoned in a deplorable condition with "leaking and unlabeled drums, a lab full of broken equipment and opened containers, an overturned electrical transformer, crumbling asbestos insulation around a boiler – as well as soil, sludge, and groundwater contamination from the waste pits," Williams reports. The levels of contaminants found on-site were staggering. The soil was contaminated with as much as 1.09 ppm of dioxin, 545,000 times the acceptable residential dioxin limit. Dioxin is known to cause and/or promote cancer in humans. In addition, there were high levels of creosote, pentachlorophenol, furans, naphthalene, PCBs asbestos, benzene, toluene, xylene, chromium, and dieldrin. For years following the plant's closing, adults in search of salvageable construction materials and children looking for fun wandered through the abandoned and contaminated facility that was only partially secured by a broken chain-link fence.⁷

In September 1991, nine years after the company had been abandoned, EPA inspectors found elevated levels of PCP in the subsoil of the ETC site. Soil samples revealed 160 to 180 ppm of PCP at 4 foot, 8 foot, and 14 foot depths. In October 1991, when the EPA finally began digging out the contamination at ETC, they pried the lid off Pandora's box. By April some 54,000 cubic yards of waste sludge and soil had been excavated and piled up. A memo from the contractor hired to do the remediation work said the sludge could be as deep as 40 feet in the ground and

estimated the total volume to be over 100,000 cubic yards. But that was not the half of it. Four months later that estimate was increased to 180,000 cubic yards and by January 6, 1993, 255,000 cubic yards had been piled up.

By then, contractors had already encountered some monumental difficulties. Severe weather had hindered efforts to install a storm-water drainage/erosion control system. In other words, storms were washing contaminated soils off-site into the surrounding residential areas. A storm in 1992 with winds up to 60 mph had also destroyed the temporary cover on the stockpiled wastes and damaged part of what was to become the temporary tarp that covers the waste today. One can only imagine how much dioxin-laced dust this storm and the others that followed scattered over the neighborhood. By the spring of 1993 the permanent cover was in place and by December 1994, the ETC had won a place on the Superfund National Priority List of 1,300 heavily polluted hazardous waste sites.⁸

There seems no question that EPA officials seriously miscalculated the size of the contamination problem at ETC and failed to adequately protect residents living next to the excavated sludge, Williams argues. Further, the agency decision to do the work under "Emergency Removal" authority instead of proceeding with a normal remediation program was, in Williams view, "a serious mistake." Under the Emergency Removal provision of the Superfund law, government contractors are permitted to start work without providing public notice; and there are no provisions for residents to participate in decisions that may affect their health.

"It was like martial law. This was a quick and cheap clean-up effort. They thought they could get by with this in an African-American community in Pensacola," charges Frances Dunham. Dunham is environmental activist who became one of the EPA's most vocal and persistent critics. She lives 20 miles from the ETC and Agrico plants (but in every other way a world apart) in Gulf Breeze, across the bridge from the inner city on a middle-class peninsula in Pensacola Bay. Dunham and her colleague, Linda Young, investigated and wrote about the contamination at the wood treatment and chemical fertilizer plant and subsequently shared what they learned with residents, many of whom were surprised to hear about just how hazardous were the conditions in which they lived.



Frances Dunham
Photo: Steve Lerner

Moon-Suits

Over and again one hears from residents about their surprise and outrage when they woke up one morning to find "men in moon-suits" digging up the contamination within sight of their yards. The plant had been abandoned for years and they had no idea that the Big Dig was about to start. Even state officials were caught off guard by the EPA's unannounced excavation at ETC. Ed Middleswart, a former district air program administrator for the Florida Department of Environmental Protection, was unaware that the EPA cleanup of the site had begun. He first heard about it "when we began to get calls, blitzes of calls, about people moving around in moon suits, earth moving equipment and creating a lot of dust and odor problems in this little neighborhood.... We found out it was the EPA and they weren't telling us what they were doing or why. We were just in the way," he told a reporter while clearly in a state of pique.⁹

EPA officials had known that the groundwater was contaminated since 1987 and about violations at the plant since 1985, Dunham points out. They should have temporarily relocated residents to safety before they began to dig (or burn) the contaminated soil, she asserts. "Instead you had workers in full protective gear excavating contaminated soil while only 15 yards away children were playing with no protection," she observes. "I was outraged and horrified that my government would treat people this way," she says. EPA officials would later determine that some residential areas surrounding the plants – such as Rosewood Terrace, Oak Park, Escambia Arms and the Pearl Street/ Hermann Avenue neighborhoods had, respectively, "unacceptable cancer risks" or "unacceptable non-cancer health risks."¹⁰

As the digging continued throughout 1992, the area that needed to be excavated kept expanding. To remove the giant volume of contaminated soil, EPA contractors clawed a 48-foot deep hole into the ground that was located so close to some residential buildings that their foundations began to crumble and had to be shored up. The excavated soils were piled up into a mound 60 feet tall, 1000 feet long, and 30 to 40 feet wide. Some estimates suggest that the pile created by EPA contractors now consists of 344,250 tons of contaminated soils.¹¹ However much it weighed, the giant mound became the tallest feature in Pensacola and residents began to refer to it as "Mount Dioxin."

"They didn't stop digging because they ran out of contaminated soil; they stopped because they ran out of money," Dunham explains. EPA officials say the excavation of the site cost some \$5 million. Treating the contaminated soils would have cost at least \$43 million, more than twice the annual Regional Removal Program budget.¹² Cleanup of the groundwater is expected to cost anywhere from \$19 million to \$56 million. By the EPA's own estimate, in addition to Mount Dioxin there remain 50,000 cubic yards of contaminated soil near the pit and beneath it. The new estimate of the amount of soil that needs to be treated adds up to 400,000 cubic yards after contaminated soils from surrounding residential properties are included. But was all of this polluted soil generated locally? Williams thinks not. From 1991 to 1992, Williams and other residents observed numerous trucks arriving at the site full and leaving empty causing them to suspect that contaminated soils were being brought in from other sites such as another superfund site in the county which was closed and declared clean.

Plastic Cover Ripped

Unable to treat such a large volume of contaminated soil (there was a brief effort to incinerate some of it on site), EPA officials decided to cover it with a 60 millimeter HDPE plastic liner. Residents were first told the plastic cover would last for five years but the EPA subsequently claimed it had a ten-year lifespan. In 1996, the contractor who installed the cover reported to the EPA that it was damaged and had a two-foot hole and a two-foot tear in it along with other smaller holes.¹³

The covering has now been in place 15 years, long past its expected lifetime, and continues to be subjected to the intense Florida sun, downpours, and windstorms, Dunham points out. Some residents report that small trees had been spotted growing through it. In 1998 repairs were made to the cover but by 2002 the U.S. Army Corps of Engineers study concluded that the tarpaulin was wearing out.¹⁴ There was some concern that a catastrophic failure of the covering might cause dioxin-contaminated soils to be blown over a wide area of the county. The tarp held during two hurricanes in 2005 with winds from 85 to 110 mph, however, residents report being peppered with some of the soils from the excavation that had never been covered. A further matter of concerns is that local kids, who snuck through the fence, discovered that the plastic served as an excellent slide.

Dunham judges the way in which the EPA handled the excavation a mistake. Not only did EPA officials not solve the problem posed by the contaminated soils, the digging actually accelerated the rate at which the plume of groundwater contamination spread. Failing to find temporary

housing for residents during the two years that the digging took place was outrageous, she continues. Even EPA officials concede that the cleanup around the Escambia Treating Company has not been their finest hour. "It is clear that it was a major mistake to dig up the material and leave it there in place for this long a period of time. That is not something that we would like to have done," says EPA Deputy Assistant Administrator, Tim Fields.¹⁵

Stop the Digging

Back in 1992, while the excavation was in process, residents in Rosewood Terrace, Oak Park, and Goulding, the communities adjacent to the plant, and in Clarinda Triangle, the community across the highway, began to experience a sharp increase in acute respiratory distress, nosebleeds, headaches, nausea, skin rashes, and a host of other ailments. The air had become so filled with dust from the constant bulldozing that residents decided they had to do something. Contractors doing the excavating were supposed to keep the dust down by spraying it with water during the excavation, but as one commentator on engineering ethics pointed out, the expense of spraying the water was bound to cut into the contractor's profits.¹⁶

Concerned by the decline in air quality and the increase in respiratory distress, residents met first at the school and subsequently at the New Hope Missionary Baptist Church in March 1992. They decided that organizing themselves into a group would make it easier to lobby local officials to help them stop the excavation. Thus was born Citizens Against Toxic Exposure (CATE).

Margaret Williams was not looking to become an activist: "They offered the presidency to a bunch of other people but I was the only one foolish enough to accept," says Williams, who other residents knew as a former teacher who had helped many local high school graduates find jobs. "I thought once we were organized it would be no problem and I could call on some elected officials to get us some relief," she recalls. "I was surprised and amazed that we got no help at that time." Those officials who did write letters to the EPA were told that the agency was doing the best it could to dig out and neutralize the source of the contamination that was leaking into the groundwater.

But for the residents who lived next door to the source of the problem, the cleanup itself was exacerbating already deplorable environmental conditions. The remedial excavation was creating clouds of contaminated dust in a heavily populated, urban area. Sometimes Williams describes the situation using diplomatic language: "they were affecting people in a negative way while they did the clean-up," she says. At other times she is blunter: "We thought they [the EPA] were coming in to help us. This recklessness [digging up contaminated soils while residents are still present] would not have occurred in non-minority or wealthy neighborhoods," she charges.¹⁷

Williams was able to make this statement based on expert technical advice given her by Joel Hirschhorn, a former government employee who worked on superfund issues for years. Hirschhorn went through voluminous EPA documents and uncovered data, which demonstrated "that the original removal action had left very high levels of site contamination all over the site including in open pits and the areas not covered by the pile of excavated materials." The remedial work neither removed the threat to shallow groundwater, "given originally by the EPA as the main basis for the action;" nor did it protect residents, he writes. This information provided Williams with a basis to contend that the removal action "had itself caused preventable health threats," he notes.¹⁸

Unable to stop the digging, Williams and other CATE activists organized protests including one at which residents held a mock funeral procession, carrying a casket past the gates of the plant. They also planted 40 white crosses as an indication of the number of lives lost to the pollution. Each cross was planted in front of a home where a family member had died in the last five years of cancer or respiratory disease. Residents began to demand relocation. Either the EPA should stop the digging or they should move the people affected, residents reasoned.

But no one listened to them and the digging continued spreading contaminated dust throughout the neighborhood. The poor air quality caused a number of problems. One woman said her daughters would not play outside because “the air would make them itch and burn, and give them headaches.” Another woman who works in her garden says she gets so dizzy doing it that she falls against walls. Residents of all ages were affected. “It’s not old people [who are dying of cancer]. It is some of the young people in their 40s and 30s, because there is a young man who died right there, he was in his 30s,” a resident told a CNN reporter.¹⁹

Some residents tried to stop the excavation by standing in the way of the bulldozers but there was simply not enough power in their neighborhood to take on the EPA, Williams observes. Locally, the deck was stacked against them. One indication of this was that the mayor of Pensacola at the time, Charles Soule, Sr., was one of the former owners of Escambia Treating, Inc. “He wasn’t going to do anything for us,” Williams says. But after continued protests and organizing by CATE the EPA finally placed the Escambia Treating Company on the National Priorities List of Superfund sites in December 1994. This decision came late, Williams notes, citing a study by the National Law Journal, which revealed that it took 20 percent longer for abandoned hazardous wastes sites in minority communities to be placed on the NPL list than it did in areas with a higher percentage of whites.²⁰

Seeking Out Allies

To get her neighbors relocated, Williams realized she would need allies from outside the community who could bring public attention to the problem and embarrass officials into action. To this end, Williams cast a wide net looking for support. First she called the Southern Organizing Committee in Atlanta. She also contacted Lois M. Gibbs at the Center for Health, Environment, and Justice (CEHJ), who, decades earlier, had found herself in a similar situation where she lived in Love Canal, New York, a community also contaminated with dioxin. Gibbs recently published *Dying From Dioxin: A Citizens Guide to Reclaiming Our Health and Rebuilding Democracy*, a book that describes in detail the toxicity of this unintentionally formed pollutant as well as what citizens can do to protect themselves from it.²¹ Gibbs was later to describe the contamination around the wood treatment and chemical fertilizer plants as “absolutely the worst” site because of the toxicity of the chemicals found there.²²

Williams also spoke with the Lawyers Committee for Civil Rights (LCCR), which helped her find pro bono legal help; and she traveled to Washington, D.C. to take her case to Carol Browner, then the administrator of the EPA. Browner knew about Mount Dioxin from her previous work as a state regulatory official in Florida. When Williams was finally able to sit down across the table from the assistant administrator of the EPA, Elliot Laws, she told him that he needed to reassess the clean-up at Mount Dioxin. As a result of this meeting, Laws assigned Robert Martin, the agency’s Superfund ombudsman, to review the remedial work being done in Pensacola.

Back in Pensacola, Williams accompanied Martin on a toxic tour of the Rosewood Terrace neighborhood adjacent to the clean-up site. It was there that he met one resident who was dying. “I just want to move out so I can get a little more time,” he told Martin. Impressed with the extent of the contamination and touched by the widespread human suffering he had witnessed, Martin pushed for testing to be done of the soils in the surrounding neighborhoods and ultimately for a relocation action.

Frances Dunham, the Gulf Breeze activist, had also been lobbying EPA officials to do off-site soil samples in the surrounding neighborhoods. When the EPA finally did the testing they found elevated levels of dioxin, dieldrin, benzo(a)pyrenes, and arsenic. The highest level of dioxin found Rosewood Terrace was 2,956 ppt, over 400 times the state residential standard of 7 ppt. The highest sample in Goulding was 125 ppt. These results were alarming enough to warrant relocation. However, the EPA and the U.S. Army Corps of Engineers (USACE), charged with carrying out the relocation plan, took a minimalist approach. In April 1996, the EPA offered to

move 66 Rosewood Terrace families. By August they upped the ante to include another 35 households in nearby Oak Park for a total of 101 families.

The Push for a Better Relocation Offer

CATE members refused this opening offer and held out for more households to be moved. Specifically they pushed for all the inhabitants of Escambia Arms, a low-income public housing project on the fenceline with ETC, and residents in Goulding to be included in the relocation plan. To bring pressure on the EPA to expand the relocation offer, CATE sponsored a meeting to discuss the issue at the New Hope Missionary Baptist Church where some 350 angry residents showed up on a steamy August evening to tell federal officials what was on their mind. Officials were presented with 300 petitions calling for a comprehensive relocation plan. "One by one they filed up to the microphones on either side of the sanctuary to voice their objections." Rejecting the Agency's claim that additional study would be needed to justify relocation of other residents, the crowd held up hand-lettered placards and chanted: "No more studies—move us now!" A number of residents who were eligible to be moved said they would hold out until their neighbors were included. "If we were white it would be a completely different story," Williams told the crowd.²³

Others in high office were sympathetic to this perspective. President William Jefferson Clinton had signed an executive order directing federal agencies to give priority to environmental justice sites where minority residents were disproportionately burdened by pollution. Williams, who had been appointed to the National Environmental Justice Advisory Council (NEJAC), had convinced other members of the group to hold a workshop on relocation in Pensacola.

Also turning up the pressure on the Clinton Administration to relocate residents near the Escambia Treating Company was former Love Canal activist Lois Gibbs of CHEJ who took out a full-page ad in the Florida edition of USA TODAY on October 1, 1996. The ad featured a photo of children playing near Mount Dioxin. The caption next to the photos quoted President Clinton saying, "No child should ever have to live near a hazardous waste site."

Two days later, on October 3, 1996, the EPA decided to accede to CATE's demand to move all 358 households living in the shadow of Mount Dioxin. This was an historic breakthrough. The Pensacola relocation initiative, which took place between 1997 and 2005, was the first major relocation by the EPA of African-American residents and cost the EPA \$25.5 million.²⁴ The Pensacola relocation initiative was the third largest in EPA history following the Love Canal relocation in Niagara Falls, New York in 1980 and the Times Beach, Missouri relocation where 2,000 residents were moved in 1982. Both of these relocation initiatives involved largely white populations.

Low-Ball Assessments

Once the decision was made to go ahead with the relocation, Williams worked to ensure that residents who had been harmed by the contamination "were made whole," as law required, and placed in a home that was "as good or better" than the dwelling they previously inhabited. The first round of appraisals yielded very low assessments ranging from \$20,000 to \$27,000. When residents demand that new appraisers be assigned some of the assessments rose from \$40,000 to \$70,000. Residents were also eligible for up to \$22,500 in additional relocation funds to place them in homes comparable to those they abandoned. Outraged by these low estimates some residents contacted a local real estate agency to do a comparative market assessment on their home that the U.S. Corps of Engineers had told them was worth \$70,000. What they learned was that recently sold comparable homes were valued at \$134,900 and \$135,000.²⁵

Not only were assessments low, for obscure, bureaucratic reasons, residents were not permitted to see the full appraisal that had been done on their home to verify its accuracy. Instead, they

were presented with a choice of three homes in their price range. If they found none of them satisfactory they could try to go out on their own and find one on the open market.

Fear drove many residents to accept an unfair offer, Williams contends. Many were concerned about the damage the contamination was doing to their health and they wanted to get out. As a result they accepted replacement homes that were shabby and located in run-down, high-crimes neighborhood, she asserts. "The plumbing, wiring, and the roofs in those places were no good and some had rotting floorboards," Williams reports. She pointed out a number of other housing defects to officials including a carbon monoxide leak in one and the lack of a ramp in the home designated for a woman who was a double amputee. One of the responsibilities of the U.S. Army Corps of Engineers, which the EPA had hired to manage their relocation program, was to inspect the homes being offered to residents. The job the Corps did was "too casual to protect homebuyers," Williams charges.²⁶

The EPA promised residents that no one would have to take on additional debt to move into a home that was "equal to better than" the one they were leaving. This promise was not met, Williams argues. A lot of folks ended up spending their savings to fix up homes, bring the utilities up to code, and fix leaking roofs, she observes. To pay for the house repairs some relocated residents were forced to take out a mortgage, whereas before they had lived in a house they owned debt-free, Williams explains. Jim and Ivey Floyd found themselves in this predicament. They had to add \$30,000 to the funds that they were permitted under the relocation package in order to move into a decent home. "This isn't at all what we were promised. People were promised replacement homes without financial losses," Williams asserts.²⁷ Many residents accepted these sub-par homes just to get away from the pollution, she adds. "They got away from the plants but by then the health of many of these people had already been damaged," she says.

In her own case, Williams thinks she was punished for her activism. "There is a price one pays for being a leader," she notes. She ended up unable to afford to move into a decent house and instead now lives in the home of one of her daughters. She was not given a fair price for her home because she had moved out by the time the relocation offer was made and her house was occupied by a young woman who needed a place to stay, Williams says. "That's what you get for speaking out," Williams says with some bitterness.

Residents were given a bad deal on their replacement homes for a number of reasons none of which were their fault, observes Joel Hirschhorn, CATE's technical advisor. Assessments were low because the neighborhoods were located near two superfund sites in a heavily industrial part of the city. Furthermore, for historic reasons, the neighborhood was segregated and had previously been one of the only places in Pensacola where African Americans could buy homes. Finally, by the time the appraisals took place, many homes were abandoned by families that had already moved out because of health problems caused by the pollution. Other homes in the neighborhood were in disrepair because their owners were too sick to maintain them, Hirschhorn points out. All these factors lowered property values.²⁸

It seems particularly unfair that someone stands to make a lot of money on the misfortune of residents who lived for years with a heavy burden of pollution and illness. The land they abandoned was much more valuable than the piddling amount they were paid for it because after they are gone city and county officials plan to clean it up and sell it for industrial use after the government finishes the minimal site remediation. "Someone is going to make a huge profit when this land is sold," one real estate expert opined. A 1995 Relocation Feasibility Study notes that nearby commercial/industrial land was selling for 250 to 300 times the price of residential property.²⁹ Unfortunately, the people who owned the homes were not going to be the ones to profit from the change in zoning and land use.

Better Deal for Whites

Bitterness intensified over the low assessments and the perceived unfairness of relocation compensation when African-American residents living near the closed wood treatment plant in Pensacola learned that whites had been given a better deal in Pennsylvania. According to EPA documents, preferential treatment had been afforded a group of 40 all-white homeowners who were relocated out of contaminated houses at the Austin Avenue Radiation Site in Delaware County near the town of Landsdowne outside Philadelphia in suburban Pennsylvania.

According to EPA documents, forty households in Delaware County lived in homes built with some materials contaminated with radium, thorium, radon, and asbestos. Decades earlier, radioactive materials had been mixed in with the construction materials used to build these homes. The radioactive contaminants had come from the W.L. Cummings Radium Processing Company that operated from 1915 to 1925.

The EPA went to a lot of trouble and huge expense to make these homeowners whole. Some 18 of the 40 homes were decontaminated at a cost of \$24 million while the residents were placed in temporary housing. Owners of the remaining 22 homes were given an option either to relocate or have new homes built under a program that cost an additional \$31 million. Of these 22 homeowners, four were not given a choice about the way in which their homes were remediated, eight chose to permanently relocate into comparable homes they found on the market, and ten opted for the EPA to build them new replacement homes.³⁰ The appraised value of these new ten homes was an average of \$147,000. Instead of offering to buy them existing homes in this price range, as was the case in Pensacola, the EPA agreed to build them brand new homes that cost an average of \$651,700 each. These were custom-built homes designed to replicate the ones they were replacing. One of them, appraised at \$200,000, cost the government a staggering \$911,411 to rebuild.³¹ “That proves that there is pretty strong discrimination involved in these relocation schemes,” observes CATE president, Margaret Williams.

After reviewing the costs entailed in the Delaware County relocation program, the inspector general of the EPA intimated that the program had gone too far. “We do not believe the EPA should be in the house building business. Furthermore, the EPA was not mandated to replicate every facet of an existing structure,” the report concluded.³² The Inspector General report also confirms that “due to public and political pressure, the Region allowed most of the owners the option to either relocate or to have new houses built on site.”³³

“Is this just more of EPA’s environmental racism,” asks Williams? “We never asked for anything but homes that are ‘decent, safe, and sanitary,’ as the EPA promised,” she continues.

Not a Precedent

While CATE won its struggle with the EPA to have residents relocated, the agency was careful to couch the reasons for the relocation in language designed to avoid setting a precedent. While officials conceded that 21 households were moved because of a health threat from exposure to dioxin, most of the other residents were moved because of a combination of factors that made the site “unique,” EPA officials argued. “The uniqueness of the site and the interaction of many factors present here do not, in EPA’s opinion, create a precedent for relocation at other superfund sites,” agency officials stipulated in their Record of Decision in February 1997. This sounded to some observers like an effort to stop residents in other contaminated communities from demanding relocations. “The EPA was on track to portray the Escambia site as a special situation to avoid setting any precedents for relocations nationwide,” notes CATE’s technical advisor, Joel Hirschhorn.³⁴

Meanwhile, *The New York Times* reporter, Adam Nossiter, was told by anonymous sources within the Environmental Protection Agency that the White House had pressured regulators to relocate

Pensacola residents near the wood treatment plant. While the exertion of political pressure was disavowed by higher-ups at the EPA and at the White House, there was common agreement that the site had become a political football. "It's a very political site," said Elmer Atkins, chief of technical services at the EPA's regional district office in Atlanta. The agency had singled the neighborhoods around ETC as a test case relocation site back in 1995, he added.

"It's a political motivation and a response to political pressure and it's an election year," agreed another unnamed EPA scientist. Environmental justice considerations had trumped health issues, some officials argued, pointing out that the EPA had previously held a 1 ppb standard for dioxin in residential soil whereas in the Pensacola case it had been lowered to 0.2 ppb. But Tim Fields, a deputy assistant administrator at EPA denied this: "The contaminant there being dioxin, the residents there are at risk." Fields went on to explain that the 1 ppb standard dated back to 1980 and that science had evolved and found that smaller concentrations of dioxin could be harmful. An EPA engineer named Hugh Kaufman put it in perspective: "Very few people [residents near the plant] are going to keel over and die because it is a superfund site. It's the long term health risks," he explained.³⁵

Success for One Holdout

Not all of the residents who lived near the wood treatment plant in Pensacola got a raw deal. Some of William's neighbors, who refused to be moved into an inferior house, ended up with pretty good housing. One of these was Jean Roshell, 69, who, for 32 years, lived 50 feet from the fenceline with Escambia Treating Company near the CSX railroad tracks in a blue house. Like Williams, Roshell also remembers the bad old days when yellow sulfur caked on her windows. And she recalls the day when County officials came to pump out a nearby well "and it gushed black stuff that burned one of the men," she says. Flooding was also a problem and spread creosote into their yard until they prevailed upon officials to dig a diversion holding pond near their home for the oily run-off.

Roshell refused to accept what she considered an inferior house that authorities had offered in a relocation package. "I decided to fight them all the way. I stuck it out so I got the best deal," says Roshell who now lives in a handsome, solid brick home in a nice neighborhood. But it took a lot of guts to stick up for her rights and negotiate with the authorities.



Jean Roshell
Photo: Steve Lerner

Living with two of her grandchildren down by the railroad tracks for two years after all her neighbors had been relocated was scary. "When I would come home I would rush to get in the house and fasten it up," she recalls. In better days homeless men who rode the rails would come to the house and she and her husband would give them clothes and feed them. After a time word spread that you could get fed at the blue house. But now that she was alone she was afraid to open the door. Roshell also missed her neighbors. It had been a tight community and people helped each other every day, she explains. "If anyone needed something I would take them to the store," she recalls.

Authorities used intimidation tactics in an effort to convince her to relocate, Roshell claims. A police cruiser was parked outside her house and authorities threatened to cut off her water and light, she says. But Roshell refused to budge. "They didn't scare me. My mama taught me not to let anyone push me around," she says. In addition, Roshell benefited from the leadership of

Margaret Williams. “Some were afraid to protest but we weren’t. Miss Williams led us. When she spoke you could hear a pin drop. She was intelligent, kind, and spoke well. And she was a great leader who did a lot for our community,” she says.

When she began negotiations over her relocation, Roshell had a house full of sick kids who she thinks were affected by pollution from the plants. She didn’t have much help because her husband, retired from the Navy, developed breathing problems and died in 1992 of lung cancer. Her mother also died a year earlier from liver cancer despite the fact that she never smoked or drank alcohol. One of her daughters lost both her legs to gangrene as the result of a botched medical procedure; and her son developed skin rashes and was sick a lot. When her daughters moved away all of their health problems cleared up, Williams recalls, but later two of them had premature babies – one weighing one pound three ounces and the other at three pounds three ounces. One of her daughters and grandson were born with developmental delays. Roshell, herself, had bronchitis and developed a growth on her leg that turned out to be skin cancer. The doctor said that it was unusual for an African-American woman to get this type of cancer and suggested that it might be a result of living near the chemical plant. In addition to dealing with the needs of her ailing children, Roshell also took in two children of a woman dying of breast cancer she met in the church where she played the organ.

Then, in 1991 “men who were all covered up in white suits” started digging up the soil just across the fenceline from Roshell’s home. “They didn’t tell us anything about what they were doing,” she says. It wasn’t until “a white woman from Gulf Breeze [Frances Dunham and Linda Young] came and told us that they were digging up toxic chemicals that we understood what was going on. With the digging you couldn’t hardly breathe and I hated coming home,” Roshell, recalls. At that point she started attending CATE meetings at the school and church.

Environmental Racism Charged



Jimmie McWaine
Photo: Steve Lerner

Residents of Rosewood Terrace, Oak Park, Goulding, and Clarinda Lane did not fail to notice that the most polluted sites in Pensacola near factories and waste treatment plants turned out to be in low-to-moderate income, African-American neighborhoods. Their neighborhood, where some 925 people lived within a quarter of a mile of the wood treatment plant, was predominantly black. In addition to the residential population, there were also five-day care centers, one hospital, and three public schools within a mile of the plant.³⁶

“I think it is racist,” observes Jimmie L. McWaine, 70, who lived 100 yards from the Escambia Treating Company and played in the grounds surrounding the facility during his childhood. “Seems like they don’t care. They know the neighborhood is right there but they just dump the stuff in the ground. If you notice, they don’t do that in the white part of the city or county,” he points out.

The wood treatment plant took a heavy toll on his family and the whole neighborhood, McWaine asserts. The fumes were the worst in the summer when the creosote got hot: “It just burned your eyes,” he remembers. And flooding brought contaminated, muddy water into people’s homes, he adds. Mostly the pollution was invisible but sometimes you could clearly see the damage that the chemicals were doing. McWaine grew vegetables in a large garden. “Then, all of a sudden nothing would grow: the ground was contaminated,” he recalls.

His family's health was also affected. His brother-in-law, who worked at the plant, died in his 40s of heart failure; his wife died of respiratory and heart disease, and he had "problems breathing" and skin rashes. Regulatory officials were doing nothing to protect the community, he continues: "You've got to be just about dead for the government to take action," he observes.

After working for 39 years making nylon at Monsanto and doing other jobs, McWaine was getting ready to retire "when guys in moon-suits [Hazmat protective gear] showed up and we learned our community was contaminated," he says. McWain was one of many local residents who had spent decades paying off their mortgages and taxes so that they would have a house free and clear of debt where they could retire. "I didn't want to relocate. I was comfortable where I was," he continues. McWaine left reluctantly: he loved his little section of Pensacola despite all its problems. Families knew each other and there were many close friendships; people looked after each other, he explains. "If one hurt the whole community hurt," he adds. But when he learned the extent of the contamination and the effect it was having and was likely to continue to have on the health of his family, he decided to move. "People were just scattered. I'll just have to start over," he says wearily.

"There was no question that the air was contaminated. It was killing us," says Sammie Lee Jones, 81, who retired after 20 years as a cook at the Pensacola Naval Air Station. Jones claims he was the second African American to move into Rosewood Terrace near the wood treatment plant in 1959. "Before that there were no homes available for blacks who were unable to get loans," he says. After that the whites started moving out and the houses were bought up by blacks. A lot of families started gardens that they ate out of, he recalls. Jones was one of the few who didn't have a garden and he figures that is one of the only reasons he is alive today. Between 1992 and 1996 Jones counted 75 neighbors who died. "I can't prove that they died from the dioxin but the government is not supposed to use people as guinea pigs," comments Jones who moved out in 1996. Jones says he feels blessed to be alive while some ninety percent of the older people who lived in his neighborhood are dead. "I'm a living witness of what happened," says Jones whose wife died of respiratory disease at the age of 72 at 1:45 a.m. on October 10, 2004. "I can't hardly breathe," were her last words. Was it because of the bad air she had breathed for years? Jones doesn't know for sure but he has his suspicions.



Sammie Lee Jones
Photo: Steve Lerner

Clarinda Triangle

On the other side of the highway from "Mount Dioxin" and the former Escambia Treating Company lies the Clarinda Triangle, a community comprised of some 55 family homes and 350 people who live in modest brick or wooden houses and trailers located on narrow winding lanes in a mixed residential/commercial area just off heavily-traveled Palafox Street.

The EPA refused to test soils in the yards of Clarinda Triangle homes arguing that contaminations would not cross the broad avenue. It wasn't until 2004 that the EPA finally tested this area after persistent lobbying by CATE and ultimately encouragement from the Florida Department of Environmental Protection. Once the U.S. EPA officials did the testing they found dioxin levels in Clarinda Triangle "as high or higher" than those found in a number of the neighborhoods closer to ETC including Oak Park, Escambia Arms, and the Hermann/ Pearl Street. As a result of these findings, a second relocation effort is now underway in the Clarinda Triangle neighborhood.



Deborah Anderson
Photo: Steve Lerner

Deborah Anderson, 50, lives in a solid brick home that her grandfather built back in the 1960s. “And God Said and It Was So” reads a sign in her yard. Anderson has lived in this house all her life, married a man who worked at Escambia Treating Company, and raised 16 children. “We drank the well water and bathed in it but it would leave a funny odor on your skin,” recalls Anderson who now drinks bottled water. Two of her children were premature and one has spina bifida. Her children also suffered from constant rashes, irritated eyes, and a variety of other health problems.

When testing by the EPA showed that the dirt in her yard was heavily contaminated with dioxin and other chemicals, Anderson knew who to blame. “It’s Escambia Treating Company that is responsible,” she charges. Just before they went out of business they sold the company to the workers and then went bankrupt. “The government wasn’t there to help us either,” notes Anderson.

Recently widowed, Anderson’s husband, who worked at the plant, died of lung cancer at the age of 53. For years he had stood on the utility poles that were soaking in creosote with nothing on his feet but tennis shoes. Eventually he developed crystals in his feet and died from inhaling the fumes, she asserts. There was no compensation from the company after he died.

Anderson used to visit friends who lived in Escambia Arms, a subsidized housing project across the highway and just opposite the wood treatment plant. The children in the complex played in the dirt and rainwater near the plant and then started “sledding” down Mount Dioxin, she recalls. Adults tried to keep them out but they would break through the fence. “Many of them had horrible rashes and lesions on their skins,” Anderson recalls. “I don’t think they would allow that to happen in a white community,” she observes.

Clarinda Triangle residents tried to get in on the relocation deal that had been offered to residents across the highway but were left out. It was at that point that Fred Weatherspoon organized the Clarinda Triangle Association to lobby for relocation and Anderson joined up. “A lot of people were dying and whole families wanted to move out,” she recalls. Her oldest children who had already moved out tried to convince her to leave: “Mama, you don’t need to be staying in that contaminated area,” one of her sons told her. But Anderson needs financial help to move.

“We Will Be Relocated”

“It’s terrible to learn that you have been living in a cesspool of contamination,” says Katherine D. Wade, 43, who is now president of the Clarinda Triangle Association. Wade grew up in Albany, New York before moving to Clarinda Triangle where she has lived with her family for the last 18 years in a wooden house not far from the highway. Her work with the developmentally disabled and doing child support enforcement “taught me to be strong and how to advocate for the underdog,” she says. These attributes turned out to be useful as neighbors turned to her to lead the relocation effort.

Wade is both an activist and also a budding diplomat. Many residents of Clarinda Triangle were angry that residents in the community across the road were relocated while they were left behind. A lot of them blamed CATE and Margaret Williams for having failed to advocate for them

forcefully enough. But Wade does not join in this castigation. She says that Williams “opened the door” for them on the relocation issue but they will have to fight to walk through it on their own.



Katherine Wade
Photo: Steve Lerner

To this end, Wade makes a strong case that residents cannot stay where they are. “We have no doubt that the pollution is causing health problems including cancer, birth defects, premature births, and autism,” she says. Soil testing performed by EPA officials as a result of CATE demands found dioxin, benzo-pyrenes, and other contaminants in the yards of homes in the community. EPA soil samples found a maximum of 85.3 ppt of dioxin in the soil compared with an allowable residential standard of 3 ppt. In all, 61 percent of the grids studied in the neighborhood had dioxin levels exceeding the standard. Benzo(a)pyrene levels were also exceeded in 53 percent of the grids studied.³⁷

“We will be relocated,” says Wade emphatically. The EPA wants to resume excavating the superfund site and to do so Clarinda Triangle residents need to be moved out of harms way, she continues. After numerous meetings with regulatory officials and writing “fierce” letters to the EPA, an agreement has been reached for relocation, she says. The EPA estimates that it will cost \$3.15 million to clean up and relocate

residents in Clarinda Triangle if it is cleaned up to a level consistent with future commercial use of the area. The estimate assumes that 55 households will need to be relocated at an average cost of \$57,000 per home.³⁸ The first six families were relocated on November 20, 2006. An updated EPA plan to move an additional 10 homes estimates the total cost per home at \$83,273 – a sum that includes the cost of the replacement home, the moving expenses, and the demolition of the old home.³⁹ “This is not adequate to cover the replacement cost of comparable houses and moving expenses,” argues Wilma Subra, a chemist and outside technical advisor who has been aiding resident groups.

Wade agrees that the process has been difficult for residents. There have been a lot of problems with low appraisals and now new appraisers have been brought in, says Wade. During the first appraisals in some cases lot sizes were misrepresented and amenities as significant as a fireplace were left out, she notes. Wade fought to ensure that residents would be able to review their appraisals and apply for a second round of appraisals that are now underway. “Residents here will never be satisfied but EPA officials are doing their best and are moving in the right direction,” says Wade. No amount of money, however, will ever provide adequate compensation for the loss of family members and friends, she adds.

“They Took Our Dreams”

When Catherine L. Clark, 59 moved to a doublewide trailer in Clarinda Triangle in 2000, she had a dream. She wanted to establish a church with a garden attached to it where she could grow fruit trees and vegetables to feed the people. The garden would also have a playground for local kids. For years she invested in the garden, working the soil and planting trees. Then men in Hazmat suits informed her that the soil was contaminated and not to eat out of it. “They took away some of our dreams. I’m saddened by that,” she says.



Catherine Clark
Photo: Steve Lerner

Clark is a big woman with a big family and a big heart. She has five natural sons, three stepsons, and three adopted sons. Five of her other children died in childbirth. She also claims 64 grandchildren and 22 great grandchildren. To be in her house is to be at the heart of one of the kitchens that feeds a good part of the neighborhood. Deep pans filled with hot food are either in the oven or awaiting transport on the counter covered in aluminum foil. Clark distributes the food to some of the community's elderly, ill, and bed-ridden residents. Since the tap water is polluted, Clark has to buy bottled water for drinking and cooking. "I spend hundreds of dollars on water," she laments.

Clark took her ministry to Escambia Arms, the subsidized housing complex across from the wood treatment plant. There she found that the children who played out in the dirt had eczema so severe that their arms were held out stiff from their bodies. One child had big boils under his arms. Her daughter-in-law lived there and had a child with pinholes in its heart. Clark's garden became an oasis for the children and provided what she thought was healthy, organic food for many. She grew okra, corn, eggplant, squash, melons, yams, potatoes, herbs, tomatoes, onions, and garlic. She also planted figs and peach trees. "That was my life. That's what I lived off," she says. Her idea was to create a homestead with four homes for herself and her sons. "Now it's been ruined," she says.

"The government allows these businesses to set up and they don't check to see if they are detrimental. They should have had regulations in place and not allowed that [heavily polluting industries] in this place," she continues. "I decided not to build a daycare center here because of the contamination. I saw all the kids with skin problems and tried to take care of them. They had sores all over their bodies. They cried, and bled, and scratched. Many of the kids had birth defects or mental retardation. They won't be able to take care of themselves and will become a burden to society," she adds.

The people who caused the pollution should be held responsible for the harm they did, Clark maintains. The corporations should step up to the plate and pay: "They left the burden on the little man's shoulders," she opines. They should also pay for follow-up monitoring of the health of the people who have been exposed, she continues. Wade is in favor of an expedited relocation program for homeowners. She is also concerned that renters should be fairly treated. Renters were also exposed to contaminants and many of them were never given health screenings, she notes. "The Clarinda Triangle Association is about more than relocation. We also want to make sure that no one is left behind," she says. "The young and the elderly should be moved out first. I won't budge until everyone has been moved.... I can be the last," she says.

Out of the Frying Pan and Into the Fire

Another Clarinda Triangle resident, Phyllis G. Ducree, 85, is familiar with pollution problems. From 1945 to 1973 Ducree lived in Cantonment, Florida, a pulp and paper mill town just northwest of Pensacola on the Alabama border. In 1941 the Florida Pulp and Paper Co. started up in Cantonment, merged into the St. Regis Paper Co., was purchased by Champion International Corp. in 1984, and more recently became the International Paper Co. The making and bleaching of paper is a dirty business that pollutes both the water and air. State and federal officials were concerned about the amount of dioxin and other chemicals the mills were



Phyllis Ducree
Photo: Steve Lerner

discharging into the water. But for Ducree the problem came in the form of air pollutants. The emissions “would burn your eyes and spot you,” she reports. To get away from the distress of living next to the paper mills, Ducree and her family moved to Clarinda Triangle. What she didn’t know was that she was jumping out of the frying pan and into the proverbial fire.

Ducree now lives with her two sons in a modest wooden home she rents across the highway from the Escambia Treating Company. “I had a beautiful garden here with peach trees, plums, and Japanese plum trees but they all died. Then the garden stopped producing,” she recalls. The loss of the garden to pollution from the plant was more than the loss of a hobby because Ducree and her family ate out of the garden.

Her older son, Arthur Sylvester Ducree, 66, worked at the wood treatment plant from 1974 to 1979 and then from 1980 to 1982. He now suffers from acute respiratory problems with what he describes as “a ring around my right lung” and kidney problems. His skin has also been seared by exposure to the

chemicals. His voice is permanently hoarse and his eyes were affected. “We had no masks. They didn’t let us know about the danger. The Government didn’t protect our health. They didn’t even stop people from fishing out of the lake on the other side of the railroad tracks near the plant,” he says. “Quite a few young people died at Escambia Arms,” he adds.

Her younger son, Kevin Ducree, 47, says his mother has to sit up at night because if she lies down she can’t breathe. “The government knew what was happening here and that this area was toxic 15 years ago but they did nothing. It’s all about politics and money. What we need is to be compensated,” he says. Another outrage is that they have to buy all their water including the water they cook in.

Sometimes the water that comes out of the faucet is green or brown and smells oily. About the quality of the water one local official is reported to have said that he thought it was safe to drink “but I wouldn’t bathe in it.” Local residents are convinced it is not only unsafe to drink but that it is also unsafe to cook in. As a result they are forced to buy large quantities of water without any compensation from either the local industries that cause the pollution or from the local officials who are suppose to provide them with safe drinking water. They cannot, however, afford to buy water that is safe to bathe in.



Arthur Ducree
Photo: Steve Lerner

“It seems like they are trying to kill us,” says Phyllis Ducree as she sits on the couch in her small, stifling living room, wheezing for breath. “I don’t like moving now that I’m settled but now I’d rather get out of here,” she says. But Ducree is a renter on a fixed income and moving is difficult. “The cost of living is up, people are out of work, and the cost of homes is high,” she adds.

Re-Burying Mount Dioxin

What to do with "Mount Dioxin" remains a quandary and source of debate among federal, state, and county officials, as well as city residents. Many agree that something must be done given that the tarp covering the highly toxic wastes is wearing out. But just what kind of remediation should take place and whether or not the wastes should be treated, removed, or reburied on site remain contentious issues. Meanwhile, county and federal officials were anxious to finish the remedy at Mount Dioxin and turn it into a commercial park. County officials declared the area a Community Redevelopment Area in 1995; and the EPA declared it a Brownfield Pilot Program in 1998, providing some funds for cleanup.

But what technical solution would be used to treat or isolate the wastes remained in question. In addition to the 255,000 cubic yards of waste currently under plastic cover, there were other hotspots on the site and pollution in the surrounding neighborhoods that, once excavated, will raise the total amount of waste that needs to be dealt with to 400,000 cubic yards, the EPA estimates.

The EPA's preferred remedy is to rebury the wastes on site along with contaminated soils from the surrounding communities in an expanded pit. After CATE objected strenuously that the contaminated wastes should not just be dumped into an unlined pit, the EPA agreed to line it with heavy plastic, Subra notes. The EPA then proposes to cover this new plateau of reburied wastes with one layer of solidified wastes (comprising 13.5 percent of the total), a layer of plastic, a layer of clay, and then top it off with native soils and grasses. Short of doing nothing, which is what has happened for the last 15 years, the so-called "capping/containment" alternative is the cheapest remedy available estimated to cost \$24.3 million.⁴⁰

Just burying the wastes on site is not as safe as treating it or removing it, observes Wilma Subra, a chemist hired as a technical consultant by CATE. "The contaminated soil will not be treated to reduce toxicity," she explains. As a result, the buried soils would remain a potential source of contamination. The plastic liner that authorities plan to use only has a 30-year expected lifetime and is not nearly as good as the ones used to line hazardous waste disposal sites. "Holes and flaws in the geomembrane liners will allow wastes to leak into the groundwater," Subra predicts.⁴¹

The depth at which engineers plan to rebury the waste is particularly problematic on this site because it is only five feet above the high groundwater elevation, Subra explains. In other words this large volume of untreated, highly toxic wastes will be separated from the high groundwater mark in the shallow sand and gravel aquifer by only a leaky piece of plastic and five feet of soil. This is "not an acceptable remedy," Subra concludes, and will likely lead to further pollution of the groundwater which is already heavily contaminated.

Other solutions, which involve either treatment or removal of the contaminated soils, are very expensive: thermal desorption treatment would cost \$246.7 million, more than ten times that of capping it. Bio-remediation treatment would cost \$157.9 million; and transporting the waste off-site to a licensed hazardous waste dump would cost \$312.8 million, a sum the government is unlikely to pay given the reduced financial resources available for remediating superfund sites. Finally, there is the soil solidification and stabilization option in which wastes would be stabilized with a binding agent, such as concrete, and then re-buried. This option, which would cost an estimated \$51.8 million, is also no bargain because binding the contaminated soils together is not equivalent of treating them and they will remain hazardous, Subra points out. The suggestion by EPA officials that they might spend an additional \$2.3 million solidifying and stabilizing some of the most toxic wastes will affect only 13.5 percent of the material, Subra adds.

Reburying the wastes without treating them is not only ill advised from a public health standpoint it is also against Florida law, Subra contends. "The state of Florida has a prohibition on landfills for such waste," she notes. Nevertheless a deal has been made to go ahead with the re-

internment of Mount Dioxin. “The issue of redevelopment [the Commercial Park initiative] drove the remedy rather than environmental and public health protection,” Subra concludes.

How Much Dioxin Is Too Much?

There is also the question of what constitutes an adequate cleanup for soils contaminated with dioxin. When Williams and CATE first began demanding a relocation and cleanup in 1991, the U.S. EPA standards for dioxin in soil were 2 ppt in residential areas, 20 ppt in commercial areas, and 200 ppt in industrial zones. In 1998, however, the EPA issued a policy directive lowering the protection standard to 1 ppb. This was meant to be an interim standard that would be reset once the EPA’s dioxin health risk assessment was concluded. Almost ten years later that report has yet to be issued.

To further complicate the question of how much dioxin should be permitted in the soil in residential areas, there is another set of federal Superfund rules which require that federal agents clean up the soils to state standards, which in Florida is 7 ppt in residential areas and 30 ppt in commercial/industrial areas. State and federal lawyers argued over which standard should apply for years finally concluding that the state standard should prevail. As a result, the area on which a commercial/industrial park will be built will be cleaned up to 30 ppt of dioxin.

By June of 2007 the EPA was poised to begin work on what agency officials see as the final phase of the remediation effort.⁴² The job will entail encasing over a half million cubic yards of soil on site at a cost of some \$17 million and will take some 16 months. In all it is expected that some 400 residents of neighborhoods surrounding the site will have been relocated. While Williams, Dunham and other CATE activists, Subra, and other Pensacola residents downhill from the site contend that burying the wastes on site is not the best solution, EPA officials disagree: “The EPA still feels this remedy is going to be protective of human health and the environment,” a local reporter was told by Laura Niles, spokeswoman for the EPA’s Southeastern Regional Office in Atlanta.⁴³

Excavating and moving 400,000 cubic yards of waste is going to stir up a lot of contaminated dust and once again residents living in communities near the site will be in danger, notes Wilma Subra. With this in mind, officials should consider relocating residents in neighborhoods across the railroad tracks from the site and at the nearby Brown Barge School, she adds.

Carrying On

Margaret Williams, 80, is now ailing and doesn’t have the energy to carry on the work of CATE without help. Her daughter, Francine Ishmael, 46, a former social worker, has stepped up to take over the day-to-day operation of the non-profit that is now tracking and providing health screenings for the some 6,000 former residents who lived near the neighborhood superfund sites. To date 1,800 residents have participated in the program, which is a joint effort of CATE and the Escambia County Health Department.⁴⁴

Ishmael, who lived at her mother’s old house on Pearl Street for 17 years, returned home in 1993 and joined CATE the year after it was founded. She watched her mother wrestle with the regulatory bureaucracy to get her community relocated and in the process learned a lot about the extent of the contamination she had grown up around. It prompted her to reflect on the possible causes of ailments that she and other residents had suffered. “There were a lot of unexplained rashes among kids, headaches, nosebleeds, and behavioral problems. The ladies in my class at school later had too many children with birth defects,” she continues. One of them sticks in her mind: a child who was born with one disproportionately large arm. Ishmael’s mother, Margaret Williams, also has a granddaughter born with six toes – an abnormality that was later corrected

through surgery. A lot of the young women Ismael grew up with had also had reproductive problems and eventually hysterectomies.

This cluster of cancer, birth defects, and reproductive disorders caused Ishmael to wonder if her illnesses had been caused by exposure to pollution from the plants. "I drank the water and played in the dirt near these places," she recalls. "I was clueless at the time. It never dawned on me that playing in the dirt or riding my bike might cause me harm despite the fact that I had asthma," she continues. Then, after she had gone away to Gainesville to college, Ishmael started having medical problems. "My stomach suddenly swelled up as if I were eight months pregnant," she recalls. Upon going into the hospital she was immediately operated upon for a large abdominal abscess that required both small bowel surgery and a hysterectomy. At the age of 23 she spent six weeks in the hospital recovering. "I almost died," says Ishmael who was told by doctors that she would never bear children.

The pattern in her family was too clear to ignore. Her grandmother had breast, ovarian, and colon cancer; her other grandmother had four miscarriages, her mother had two children born either dead or so sick they died within three months, and now here she was the third generation experiencing major reproductive problems. "I began to think about all the things that might have contributed to my problem," Ishmael says. She remembered gardening and digging in the soil, eating the delicious plums, gapes, and blackberry cobblers they made from the fruit they grew.

Nothing to Worry About

Federal, state, and local officials downplayed the possibility that contaminants from the plants had caused health problems among nearby residents. They said there was an odor problem but not a health problem. Officials claim there was "a soil emergency" not a health emergency, notes Frances Dunham of CATE. Both an official from the Agency for Toxic Substances Disease Registry (ATSDR) and a state health official when asked said that it was impossible to tell if pollutants had caused ill health in the community, suggesting instead that most of the illness was caused by lifestyle issues such as smoking, drinking, and drugs, she continues.⁴⁵ "It does not represent an emergency situation," said Mark Fite, the EPA Region IV project manager in 1996, noting that contamination levels were not so high as to pose threats to residents. "We're within the risk range," he added.⁴⁶ Activists think these statements were misleading. Federal environmental and health regulators "provided false reassurance to officials and physicians: they treated victims [of environmental contamination] as neurotics if not opportunists," Dunham charges.⁴⁷

At the federal level, the ATSDR raised no health concerns about dioxin despite the fact that soil samples had found dioxin readings as high as 950 ppt while the standard residential exposure level was 7 ppt. ATSDR officials took the position that "we do not know what cancer health risks are likely" due to the fact that dioxin's carcinogenic properties are under review.⁴⁸ This was hardly the precautionary principle in action. The ATSDR report inadvertently helped residents by noting that dioxin levels above 50 ppt could cause non-cancer health risks. Then, illogically, the report concluded, "The levels of dioxin, TEQ in off-site soil are unlikely to cause non-cancer health effects."

When the ATSDR issued a protocol for a proposed health study in the communities surrounding Mount Dioxin, without first consulting community leaders, they ran into resistance. Williams was unsure if her community would benefit from such a study and consulted independent epidemiologists to get their opinions. "Each warned against participation in the study as described, calling it ill conceived, valueless, outrageous, inconclusive by design," recalls Frances Dunham, a founding member of CATE.⁴⁹ After hearing this advice, Williams asked ATSDR officials not to conduct the study and urged residents not to participate. CATE was unwilling to participate in a study whose flawed design would likely lead to invalid conclusions, Dunham says.

“(T)here was too much distrust of ATSDR at the time and the community was afraid that the EPA might manipulate the results to reverse its decision to relocate residents,” Hirschhorn observes.⁵⁰

Skepticism about ATSDR's approach to contamination problems is widespread among community groups many of which complain that the agency's approach is “inconclusive by design.” This reputation is not unfounded. In many parts of the country where ATSDR officials have carried out investigations they have found inconclusive evidence of a causal effect between toxic chemical exposures and health effects among residents. “ATSDR studies come too late in the process and rarely associate the waste issues with impacts to human health,” observes Wilma Subra, a chemist who advises community groups on contamination problems. Given this track record, Williams' decision not to participate in the ATSDR study may have been both strategic and shrewd. However, by taking the position that residents didn't want any more studies they just wanted to be moved, leaders of CATE achieved their goal of residential relocation at the cost of sacrificing the gathering of health information.

Despite this dearth of hard data about health effects from ESC's pollution, there is a striking similarity between the type of diseases that residents were suffering and the known illnesses that are caused by the chemicals to which they were being exposed. For example, dioxins and furans, which can be lethal at minute doses, were found at very high levels on the grounds of the plant and in the soils in surrounding neighborhoods. Dioxin is a human carcinogen and furans are a possible carcinogen. They also cause nervous system disorders, skin disease, liver and kidney disease, birth defects, and reproductive disorders, along with a host of mental and behavioral problems. All of these problems sound very familiar to residents in the neighborhoods surrounding the plants.

Elevated levels of dieldrin, a banned pesticide, were also found in the soil of homes near both ETC and the Agrico Chemical Company. Dieldrin was banned because it is a probable carcinogen and is known to cause liver, kidney, nervous system, and reproductive disorders. Levels of dieldrin, as high as 2,000 ppb, were found in the soil outside homes near the chemical fertilizer factory, while 40 ppb are considered safe.⁵¹

We all know that arsenic is a poison having watched murder mysteries where someone knocks off an old woman by putting it in her tea. Near the Escambia Treating Company levels of arsenic in the soil were found as high as 9,400 ppb while outside the grounds of the Agrico Chemical Company they were as high as 48,000 ppb. Both of these readings are considered high given that the safe level is 370 ppb. Arsenic can cause bladder, kidney, lung, and liver cancer, as well as irritation to the skin, eyes, and throat, and abnormal heart and nerve function.

Finally, 1,133 ppb and 24,705 ppb of benzo(a)pyrenes were found in the soil outside the fences of ETC and Agrico respectively. The EPA considers 88 ppb a safe level. These chemicals are known to cause lung cancer, leukemia, tumors of the stomach and skin, as well as developmental and reproductive effects.⁵²

Mix all of these chemicals together into a toxic stew and then expose a population of people of all ages to them over a period of decades and you are likely to get some serious medical problems.

Not Served Well

“The government did not serve us well,” CATE's director Francine Ishmael concludes. Residents were not notified that they were living next to two heavily polluted sites and that a massive cleanup was about to take place. The neighborhood she grew up in was so polluted that when it rained an oily sludge came up out of the ground. “It is really awful. The government does not have the courtesy to think about our health. We have six superfund sites in our county but in the affluent neighborhoods there are no industries or treatment plants,” she points out.

What she learned watching her mother's struggles with local officials and the regulatory bureaucracy was "that the authorities needed to be challenged and held accountable." There was not enough local press coverage, Ishmael complains. Occasional articles would appear about the pollution problem in her neighborhood but they were often muted, buried on back pages, or there was little follow-up. She believes the reason for this under-reporting of the contamination problem is financial: the big companies take out ads in the papers and that keeps publishers from running stories that criticize the biggest polluters. Despite these challenges, Ishmael learned that "people have more power than they think they do if they work together."

Was justice done for the residents who lived next to these two superfund sites? Margaret Williams thinks not. While the relocation effort was a step in the right direction, it was flawed in its execution. Furthermore, Williams feels that local officials failed to do their job adequately. "It would have been justice if our local elected officials had stood up for us and demanded that federal officials treat us right or provide us with compensation," Williams opines. But they did not.

Stepping back from the immediate dilemma of people living on the ground next to Escambia Treating Company and Agrico Chemical Company, it is possible to discern some of the reasons that the government moved so slowly to deal with this contamination problem. One reason is that after the Republicans took over both houses of Congress they permitted the corporate tax that provides money for the cleanup of superfund sites to expire. By 2004 the Superfund's trust fund had gone dry despite the fact that there remain more than 1,200 superfund sites on the official list that remain to be cleaned up. This has left EPA officials without enough money to protect the health of those living near these chemical hazards. The agency is drastically cutting back on the number of sites being treated: in 2007 the agency originally proposed to treat 40 sites but has now cut that back to 24. The amount the EPA has recouped from polluters has also dropped precipitously "from \$320 million in 1999 to \$60 million in 2006," writes Bradford Plumber.⁵³

With constrained budgets, regulators and engineers are being faced with increasingly harsh ethical dilemmas. How many people should be moved away from superfund sites and should residents be told of dangers when excavations begin? These moral quandaries are now occurring with such regularity that workshops are being held on the subject to train engineers to make decisions that are critical to the life and well being of local residents.

At one such workshop, where the Escambia Treating Company excavation was the subject of discussion, the presenters suggested that the Golden Rule is the best guide for engineers faced with the cleanup of a superfund site adjacent to a residential community. The question should be asked: would the site manager responsible for the cleanup operations "have been willing to exchange places with those living next to the site," writes Edmund Tsang and John C. Reis. These authors very much doubt that the site manager would have been willing to live in the neighborhood bordering the remediation work being done at the ESC given that the toxins involved caused cancer and birth defects. "It is doubtful that he would have been willing to accept these consequences, certainly not without informed consent. So by the Golden Rule Test, he should have notified the affected community of the danger," the authors continue. Not telling them violated their "right to free and informed consent and possibly the rights to life and health as well," they conclude.⁵⁴ And yet in the real world, local residents were not warned of the danger prior to the big dig at ETC and instead first learned about the danger when they saw men arriving to dig up the soil in their neighborhood in protective gear.

Applying the "golden rule" is a good place to start but as Lois Gibbs points out, invoking high principles and telling the truth about contamination in residential neighborhoods is not enough to cause change. Often long, tenacious, grassroots campaigns backed up by larger national coalitions are needed. The activities of CATE, guided by the leadership of Margaret Williams won out after years of hard work. "Persistence, unity, and visibility have paid off," writes Williams looking back on the long struggle to move her neighbors out of harm's way. Convincing EPA officials to relocate the neighborhood was "an important victory for local residents and also, we hope, for the principles of public health protection," she concludes.⁵⁵

© Steve Lerner 2007

Steve Lerner is Research Director at Commonweal, a non-profit located in northern California that focuses on environmental health issues. The story seen above will be included in an upcoming book tentatively entitled *Sacrifice Zones: The Frontlines of Toxic Chemical Exposure in the United States*.



The Collaborative on Health and the Environment
PO Box 316, Bolinas, CA 94924
Info@HealthandEnvironment.org
www.HealthandEnvironment.org

Endnotes

¹ Margaret L. Williams, "Environmental Justice: A Sacrifice Zone in Pensacola," Citizens Against Toxic Exposure, undated, pg.2.

² U.S. Environmental Protection Agency, "Superfund Proposed Plan Fact Sheet: Escambia Treating Company Site," August, 2005, p.1

³ Beyond Pesticides, "Poison Poles: A Report About their Toxic Trail and Safer Alternatives: Chemical Treatment of Wood," < www.beyondpesticides.org/wood/pubs/poisonpoles/wood.html > undated, p.4.

⁴ Wilma Subra, personal communication, October 16, 2007. This study is in press and has been accepted for publication.

⁵ Steve Curwood, "Reaching Beyond 'Mount Dioxin,'" World Media Foundation, April 19, 1996, pp.4-5.

⁶ U.S. Environmental Protection Agency, Region 4 Superfund, "Escambia Wood Update," June 15, 2007, p.1.

⁷ Margaret L. Williams, "Environmental Justice: A Sacrifice Zone in Pensacola," op. cit., pg.1.

⁸ Edmund Tsang and Jon C. Reis, "Engineering Ethics Cases, Mechanical Engineering Case 8, Mount Dioxin," National Science Foundation and Bovay Fund workshop, Texas A&M University, August 14-18, 1995, p.3.

⁹ Nekeita Taylor-Hunley, "Mount Dioxin: Pensacola's big dirty secret," *ECorsair*, September 12, 2007, p.2.

¹⁰ Wilma Subra, "Clarinda Triangle: Alternative 2 Capping/Containment," personal communication, June 1, 2007.

¹¹ Scott Streeeter, "EPA evaluates replacing tarp covering 'Mount Dioxin:' Stability during hurricane spurs cost evaluation," *Pensacola News Journal*, April 1, 2003, p.1.

¹² National Academy of Engineering, < www.onlineethics.org/CMS/profpractice/ppcases/numericalprob/mtdioxin.aspx > p.4.

¹³ Frances Dunham, "Relocation Revisited: Pensacola Neighborhoods Begin Moving from Contaminated Homes," *The Harbinger*, Mobile, Alabama, April 14, 1998, p.3.

¹⁴ Scott Streeeter, "EPA Evaluates..." op. cit., p.2.

¹⁵ Brian Cambell, "Neighborhood finally moving away from Mount Dioxin," CNN, October 18, 1996, p.3.

¹⁶ National Academy of Engineering, op. cit., p.8.

¹⁷ CATE, "The Pensacola Struggle for Justice Continues: Historic Relocation Still Has Serious Flaws," undated, p.3.

¹⁸ Joel S. Hirschhorn, "Two Superfund Environmental Justice Case Studies," Hirschhorn & Associates, Wheaton, MD, p.3.

¹⁹ Brian Cambell, "Neighborhood finally..." op. cit., pp.1-2.

²⁰ Frances Dunham, Citizens Against Toxic Exposure, "Environmental Justice Against All Odds," undated, p.2.

²¹ Lois Marie Gibbs, et.al., *Dying From Dioxin: A Citizen's Guide to Reclaiming Our Health and Rebuilding Democracy*, South End Press, Boston: 1995, pp.361.

²² CATE, "The Pensacola Struggle for Justice Continues: Historic Relocation Still Has Serious Flaws," undated, p.3.

²³ Frances Dunham, Citizens Against Toxic Exposure, "Environmental Justice Against All Odds," undated, p.5.

²⁴ U.S. Environmental Protection Agency, "Escambia Wood Update," op. cit., p.1.

²⁵ CATE, "The Pensacola Struggle for Justice Continues: Historic Relocation Still Has Serious Flaws," undated, p.6.

²⁶ Frances Dunham, "Relocation Revisited," op. cit., p.2.

²⁷ Francis Dunham, "Relocation Revisited," op. cit., p.2.

²⁸ Francis Dunham, "Relocation Revisited," op. cit., p.2.

²⁹ CATE, "The Pensacola Struggle for Justice Continues: Historic Relocation Still Has Serious Flaws," undated, p.7.

³⁰ Office of the Inspector General, U.S. Environmental Protection Agency, "Replacement Housing at the Austin Avenue Radiation Site," #810009, executive summary, last updated September 28, 2007, p.1.

-
- ³¹ Francis Dunham, "Superfund Relocation Racism: A White Community in Pennsylvania; An African-American Community in Florida," *The Harbinger*, Mobile, Alabama, May 12, 1998, p.1.
- ³² Office of the Inspector General, U.S. Environmental Protection Agency, Audit Report, "Replacement Housing at the Austin Avenue Radiation Site." U.S. Environmental Protection Agency, Office of Inspector General, Audit Report, "Replacement Housing at the Austin Avenue Radiation Site," Executive Summary, March 30, 1998, p.2.
- ³³ U.S. Environmental Protection Agency, Office of Inspector General, Audit Report, "Replacement Housing at the Austin Avenue Radiation Site," Executive Summary, March 30, 1998, p.2.
- ³⁴ Joel Hirschhorn, op. cit., p.5.
- ³⁵ Adam Nosister, "Villain Is Dioxin. Relocation is Response. But Judgment Is in Dispute," *The New York Times*, October 21, 1996.
- ³⁶ Dunham, "Environmental Justice...", op. cit. p.2.
- ³⁷ Wilma Subra, "Surface Soils Exceeding Florida Residential Cleanup Values," letter to Margaret Williams, president, CATE, December 28, 2004.
- ³⁸ U.S. Environmental Protection, "Escambia Wood Update," op. cit., p. 1.
- ³⁹ Wilma Subra, "EPA Proposed Plan for Escambia Treating Company Superfund Site," op. cit., p.9.
- ⁴⁰ U.S. Environmental Protection Agency, "Superfund Proposed Plan Fact Sheet...", op. cit., pp.15-18, 21-22.
- ⁴¹ Wilma Subra, "EPA Proposed Plan for Escambia Treating Company Superfund Site," p.3.
- ⁴² This "final" phase of the cleanup refers to the remediation of contaminated soils and does not address the unresolved problem posed by groundwater contaminated by the site.
- ⁴³ Derek Piynick, "Superfund Cleanup gets \$2 million: Some Unhappy with Mt. Dioxin Burial Plan," June 2, 2007.
- ⁴⁴ Erin Gibson, "Superfund study wants you: Those who lived close to sites eligible for free health screening," *Pensacola News Journal*.
- ⁴⁵ Frances Dunham, "Environmental Justice Against All Odds," op. cit., p.2.
- ⁴⁶ CATE, "The Pensacola Struggle for Justice Continues: Historic Relocation Still Has Serious Flaws," undated, p.1.
- ⁴⁷ Frances Dunham, "Environmental Justice Against All Odds," op. cit., p.3.
- ⁴⁸ Joel Hirschhorn, op. cit., p.4.
- ⁴⁹ Frances Dunham, "Environmental Justice Against All Odds," op. cit., p.3.
- ⁵⁰ Joel Hirschhorn, op. cit., p.4.
- ⁵¹ Frances Dunham, "Environmental Justice Against All Odds," op. cit., p.4.
- ⁵² Citizens Against Toxic Exposure, "Escambia Treating Company and Agrico Superfund Sites: Contaminants of Concern and Health Effects," undated, p.1.
- ⁵³ Bradford Plumber, "Is the EPA's superfund program dead?" *The New Republic/Online*, May 15, 2007, p.2.
- ⁵⁴ Edmund Tsang and Jon C. Reis, "Engineering Ethics Cases," op. cit., p.5.
- ⁵⁵ Margaret L. Williams, "Environmental Justice...", op. cit., undated, pg.4.