

CenterPiece

Research Scholarship, Collaboration, and Outreach at Northwestern University

SPRING 2013



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UNIVERSITY

An oft-quoted aphorism is “Everyone talks about the weather, but nobody does anything about it.” At Northwestern, “Everyone talks about the environment but here faculty—and students—are doing something about it.” In this issue of *CenterPiece* dedicated to energy and sustainability, we take a look at how members of the Northwestern community are exploring, understanding, and healing our ailing environment. 

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This publication is available online at:
<http://www.research.northwestern.edu/orpfc/publications/centerpiece>

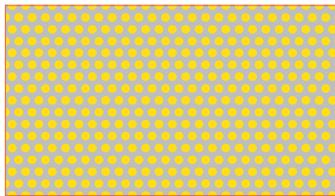
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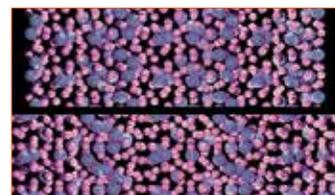
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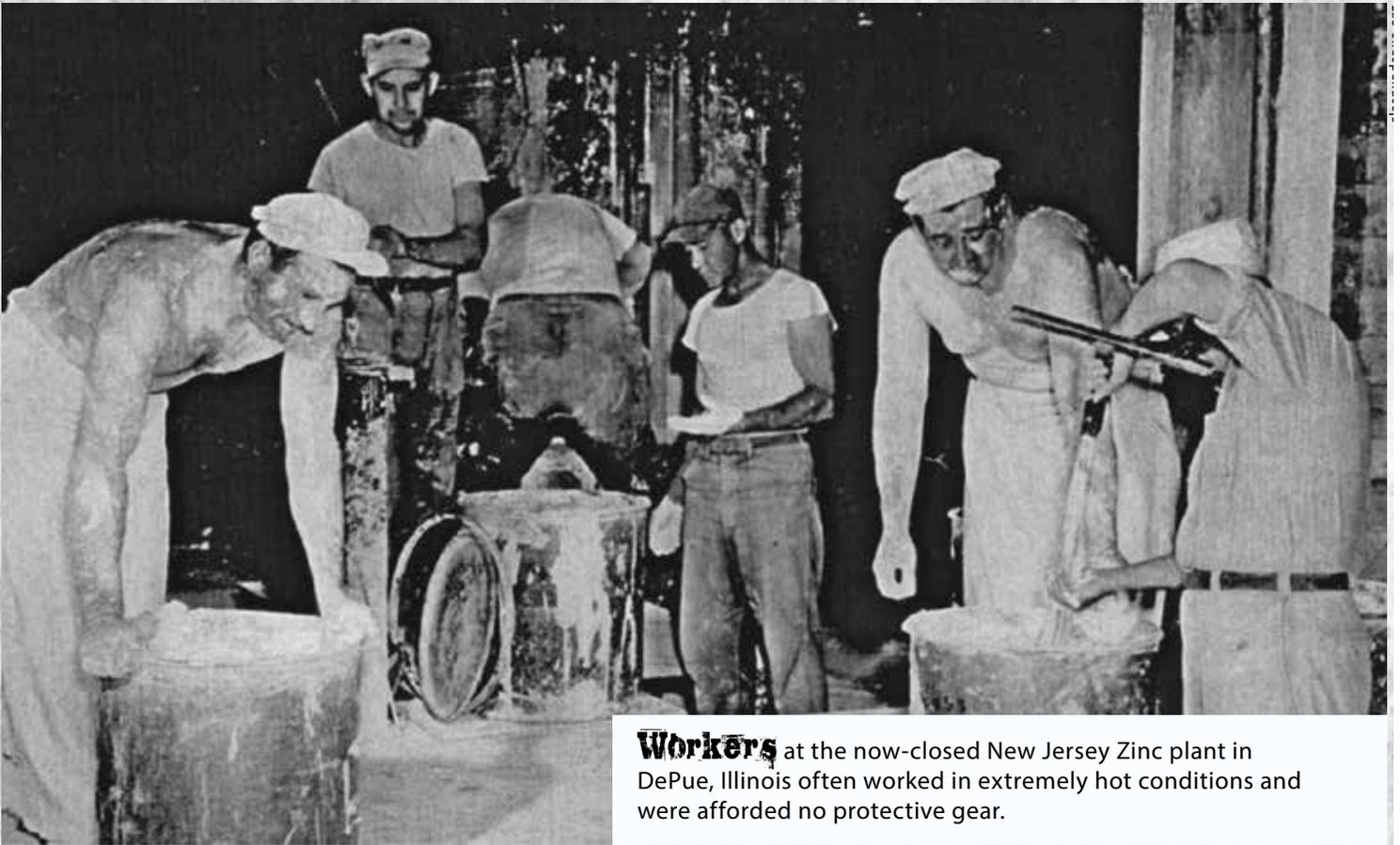
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Hail JCESR: The Joint
Center for Energy
Storage Research



Center | Point

COVER — A Star is Born An image showing a unique, wide-field infrared view of an "emission" nebula that shines by its own light. The bright orange nebula is situated within a dark cloud in the Milky Way at a distance of 4,000 light-years away. Farhad Zadeh has developed a new way to examine these dark clouds—and the stars within them—by using radiowaves. Read about his research into dusty space clouds and shrouded stars on page 21. Image used courtesy of the European Southern Observatory.

Northwestern's Environmental Advocates



Workers at the now-closed New Jersey Zinc plant in DePue, Illinois often worked in extremely hot conditions and were afforded no protective gear.

When people enter DePue, Illinois, the first thing they see is the slag pile.

The dark 750,000-ton mountain casts a shadow over the main road into town. The byproduct of a long-closed zinc-smelting plant, the slag covers a 60-acre area and is piled several stories high. DePue's residents call it the "pile of black death."

There is good reason for the nickname. The slag pile is the most visual reminder of DePue's toxic past. The smelting and other operations, including fertilizer manufacturing, led to severe contamination of nearby Lake DePue and most of the town. Both are polluted with high levels of zinc, lead, arsenic, and other heavy metals. Exposure to these contaminants can cause illness, neurological damage, and even death.

"It's not just the slag pile," says Nancy Loeb, law. "The contamination is in the ground water. It's in the parks and baseball fields where children play."

Loeb is director of Northwestern's Environmental Advocacy Center, which is a part of the School of Law's Bluhm Legal Clinic. Students in the center handle cases and look for environmental solutions through litigation, administrative proceedings, legislation, public advocacy, and media. For two and a half years, the center has been working with the Village of DePue in an effort to get the responsible parties to clean up the hazardous waste.



Nancy Loeb

Courtesy School



cleanupdepue.org

The 750,000-ton, 60-acre large slag pile looms over DePue, polluting its earth and ground water. The inset image is a close-up shot of the toxic mound that greets visitors when they drive into town. The slag pile is leftover waste from a long-closed zinc smelting plant.



cleanup



Runoff from the plant turns patches of water neon blue, red, and green. Pale white fish float belly-up to the lake's surface and rot in the sun.

DEPUE'S GRITTY PAST

DePue was not always this way. It was once a bucolic town known for its pure, spring-fed waters. Most residents made their livings through ice harvesting and fishing. St. Louis brewing companies kept icehouses along the lake to collect DePue's famous ice for their frosty beer.

New Jersey Zinc Company opened its zinc-smelting plant in DePue in 1903. Because a byproduct from zinc smelting is used in fertilizers, a diammonium phosphate fertilizer plant opened in 1967. The result was a large waste pile—more than 100 acres—of phosphogypsum, from the conversion of phosphate rock into fertilizer.

Emissions from the smelting process were so powerful that the fumes peeled paint off cars. Runoff from the plant turned patches of water neon blue, red, and green. Pale white fish floated belly-up to the lake's surface and rotted in the sun. In 1990 the facility stopped operations, and New Jersey Zinc demolished most of the remaining structures. Through various mergers and acquisitions, responsibility for the site fell to CBS/Viacom and ExxonMobil. The Environmental Protection Agency declared the Village of DePue a Superfund site, signifying severely harmful toxic waste.

"These companies say they never did anything on the site because they never operated anything there," Loeb says. "In my view, that's nonsense. The price they paid for the land reflected a lot of profit to be gained from it. Then they just walked away and left the people of DePue with a massive slag pile and a contaminated town. It's not right."

The State of Illinois sued the companies in 1995. But after 15 years with no progress in the case, the Village of DePue approached Northwestern's Environmental Advocacy Center for help. Students in the center gathered information, developed advocacy strategies, and consulted with several experts, including researchers at Northwestern.

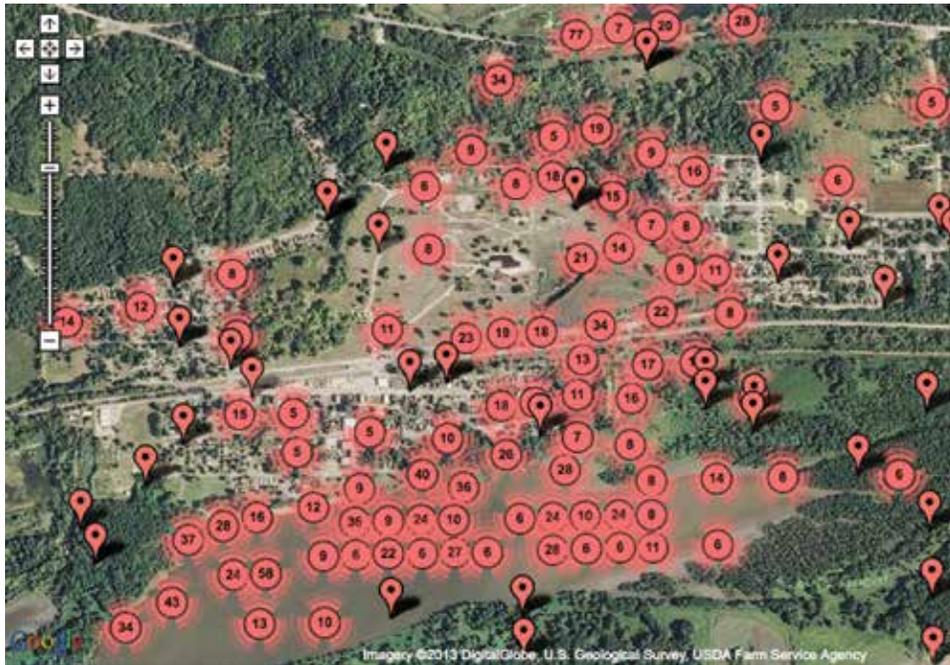
IT TAKES A VILLAGE

After hearing about his work for Native Americans facing uranium contamination, Loeb contacted Franz Geiger, chemistry, for help in understanding reports on DePue's contamination levels. Geiger enlisted his students to study

17 years of DePue test data. Working with Groundswell Educational Programs, Geiger's students created an online interactive map showing the points of contamination. By clicking on any point, the user can view details about the contamination as well as compare it with normal health and water standards. (Visit the site at www.cleanupdepue.org, which was made possible by a grant from the Initiative for Sustainability and Energy at Northwestern.)

Kimberly Gray, civil and environmental engineering, and her students analyzed the health and contamination reports and wrote expert comments about them. According to Loeb, these materials have been highly effective in her contacts with the Illinois Environmental Protection Agency (EPA) about how to proceed.

"The clinic has engaged a number of scientific experts in geology, hydrogeology, and toxicology to provide expert comments on reports," Loeb says. "Being an entity within Northwestern has given us access to so much support and enabled us to do more good."



Each red marker indicates contamination. The sample data contained on this contamination map was originally created by contractors employed by the responsible parties (ExxonMobil and CBS/Viacom). The data was obtained from the IL EPA via the Freedom of Information Act and was then digitized by a team of Northwestern University interns. Source: <http://cleanupdepue.org/contamination-map/>.



cleanupdepue.org

Boarded up and closed many years ago, the former plant site stands shuttered in the center of town.

Teresa Woodruff, obstetrics and gynecology, and her colleagues have recently put together a grant proposal to study reproductive health issues in DePue. If the funding is granted, then it will be DePue residents' first participation in a scientific study to provide meaningful information about the contamination's health effects.

FUTURE LAWYERS

When evaluating environmental cases to tackle, Loeb says, the clinic looks for those that will provide students with hands-on learning experiences. "The center exists first to enable students to learn how to be lawyers," she says. "We also choose cases where the center can make a real difference in cleaning up the environment and in people's lives."

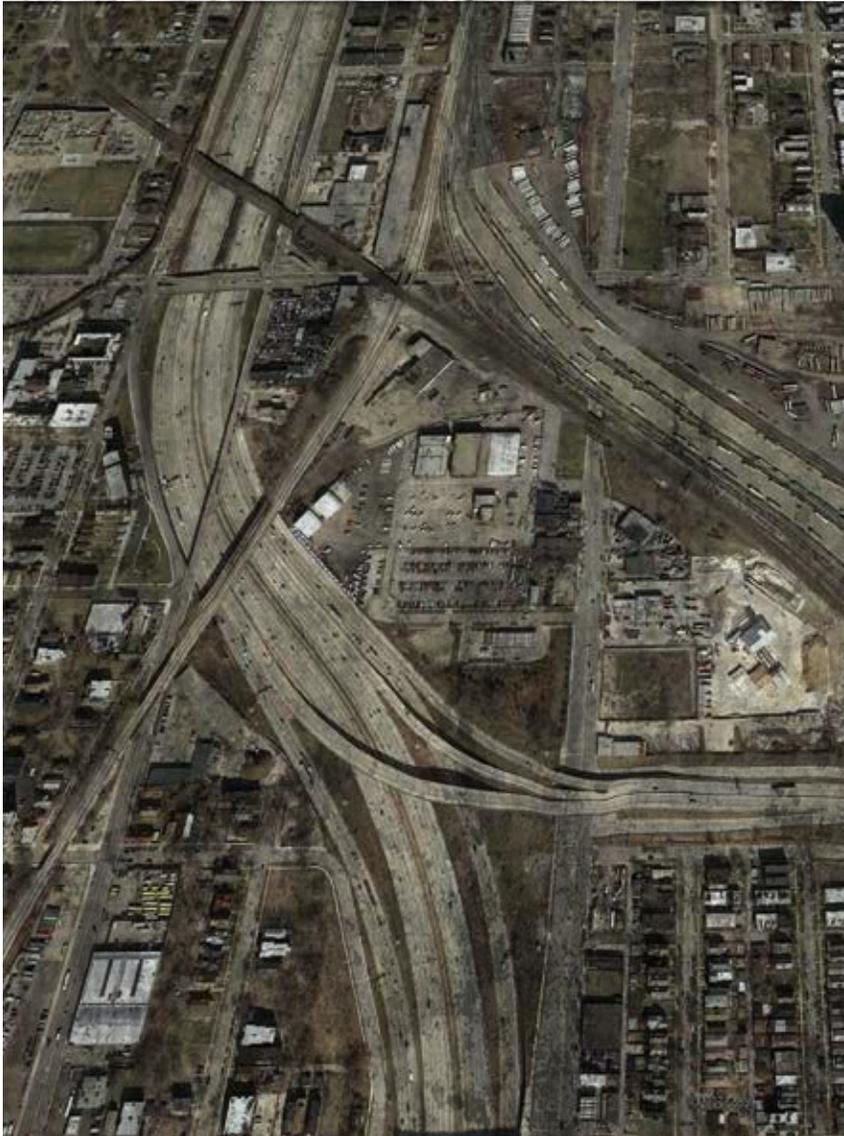
Consisting of eight students, the clinic class meets once a week for two hours. While most class members are law

students, a few have been from the Evanston campus (including one this quarter from the Chicago Field Studies program). The first day of class, Loeb outlines the center's various project partnerships with the Environmental Law and Policy Center and allows students to choose one for that semester.

Loeb says the clinic gives students experience with not just litigation but all types of advocacy. "There is a great complexity to most legal problems," she says. "Having the ability to be very creative in using legal skills is important to make things happen."

The Environmental Advocacy Center is partially funded by ISEN. To learn more about the center, visit <http://www.law.northwestern.edu/legalclinic/environmental>.

—Amanda Morris



SUSTAINABLE ENGLEWOOD

In addition to DePue, the Environmental Advocacy Center is working with a Southside Chicago group called Sustainable Englewood Initiatives. Norfolk Southern Railroad is planning to expand a rail yard in the Englewood neighborhood. Residents in the area are concerned about the drastic increase of diesel fuel exhaust from truck traffic coming in and out of the rail yard. The yard is being built on 84 acres of land that used to be dedicated to open space and homes.

“Englewood already has a lot of pollution in the air,” Loeb says. “The neighborhood borders the Dan Ryan Expressway, and a lot of truck traffic goes over the Dan Ryan. The combination of that with the train traffic and industrial sources has led to very high levels—perhaps one of the highest levels in the country—of asthma.”

The expanded rail yard will add 2,500 daily truckloads traveling through the area. Diesel pollution also can cause fatal diseases, such as cancer, strokes, and heart attacks. Those who live and work in close proximity to where diesel engines are concentrated are especially vulnerable.

The center has partnered with the Environmental Law and Policy Center (ELPC) in the Midwest and the Respiratory Health Association of Chicago to work with the mayor’s office and the Chicago city council. The center has been negotiating with Norfolk Southern to put protections in place, such as filters on trucks or anti-idling equipment for trains. They hope these solutions will make Chicago’s air safer to breathe. —*Amanda Morris*

Google earth