

Study shows vulnerable populations disproportionately burdened by 'super polluters'

January 29 2016, by Melissa Andreychek



University of Maryland research that crosslinks toxic pollution to race and socio-economic status was published this week in the peer-reviewed journal *Environmental Research Letters*.

Focusing on the industrial facilities responsible for one billion chemical releases in the U.S. in 2007, an interdisciplinary team from the fields of environmental sociology and computational science have identified that a class of "super polluters"—the worst of the worst—contribute disproportionately to pollution affecting minority and low-income communities. The study's findings suggest that selective enforcement,

rather than sweeping initiatives, could lead to the greatest environmental gains at potentially reduced costs.

The analysis is the first to cross-link releases of more than 600 chemicals by 16,000 facilities nationwide to the race and [socio-economic status](#) of the local communities. Mary Collins, an environmental sociologist at the State University of New York College of Environmental Science and Forestry (SUNY-ESF), lead the research while a postdoctoral fellow at the [National Socio-Environmental Synthesis Center \(SESYNC\)](#) of the University of Maryland.

In "linking 'toxic outliers' to environmental justice communities," Collins and her co-authors, Joseph JaJa, professor of Electrical and Computer Engineering and the Institute for Advanced Computer Studies at the University of Maryland, and Ian Muñoz, formerly of SESYNC, reveal that high minority and low-income neighborhoods—areas that are already more likely to be contaminated by toxic industrial pollution than predominantly white and high income neighborhoods—are at exponentially elevated risk from super polluters. The industrial facilities in these areas generate disproportionately high amounts of pollution, and they are more likely than other facilities to be located near communities of color and low-income populations.

Collins and her collaborators say their research may help explain why these communities are perpetually more polluted than their predominantly white and affluent counterparts. One hypothesis is that these places may have limited political or economic power, so super polluters may be able to exist there without the attention they might receive elsewhere.

To estimate potential [human health](#) risk from reported toxic chemical releases, Collins and her colleagues went facility-by-facility using data provided by the U.S. Environmental Protection Agency. They found that

fewer than 10 percent of the 16,000 industrial facilities studied generate more than 90 percent of human health risk to toxic emissions. Next, the researchers linked human health risk to demographics by mapping chemical releases with data from the U.S. Census. They found that high minority and low-income communities are impacted to a substantially greater degree by the worst-of-the-worst 10 percent of polluters.

"We break down the large problem of industrial pollution into its most harmful pieces to identify who is living near the most toxic polluters. This could be useful to policy and decision makers because targeted reforms may lead to the greatest environmental benefit at potentially reduced costs, while doing so in communities that need it most," Collins said.

"If you're non-white or poor, your community is more likely to be polluted by arsenic, benzene, cadmium, and other dangerous toxins from industrial production," said Collins. "What's new and surprising is that industry's worst offenders seem to impact these communities to a greater extent than might already be expected."

One striking finding from the study is that this pattern holds across the country. "Only a small percentage of facilities are responsible for the great majority of environmental harm. And those facilities are sited in some of our most vulnerable high minority, low-income [communities](#)," said Collins.

More information: Mary B Collins et al. Linking 'toxic outliers' to environmental justice communities, *Environmental Research Letters* (2016). [DOI: 10.1088/1748-9326/11/1/015004](https://doi.org/10.1088/1748-9326/11/1/015004)

ianamunoz.github.io/tri_map/

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