

Poorer communities hardest hit by toxic pollution incidents

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Toxic pollution hits poorer populations hardest as firms experience more pollutant releases and spend less money on waste management in areas with lower average incomes.

Research from Lancaster University Management School and Texas Tech University, published in *European Economic Review* looked into the relationship between the location choices of potentially polluting firms and levels of local income to discover if firms made strategic decisions on site locations based on population demographics.

The team studied potentially polluting firms across Texas, and found a correlation between lower income locations and the probability of potentially polluting firms choosing to locate there. Their data, from the US Environment Agency's Toxic Release Inventory also showed the relative frequency of toxic releases decreased as household income rose.

"We looked both at whether firms made decisions on their location based on demographics—particularly income—of the local areas, and also whether firms made different choices on limiting the possibilities of toxic release through waste management based on those same statistics," said co-author Professor Dakshina De Silva, of Lancaster University's Department of Economics.

"Firms reduced their releases and increased spending on waste management in higher income areas—evidenced by a greater number of waste management services—while lower income areas were disproportionately subject to toxic releases.

"The patterns we observed lead us to conclude that, at least partially, potentially polluting firms seek to maximize their expected profits and recognize the financial risk associated with a release in different areas."

Releasing [toxic chemicals](#) in the environment is costly for firms because they will have to implement clean-up programs, pay penalties and compensate local residents for damages. Higher incomes—and associated [property values](#)—increase the costs as damages are linked to reduced property values and lost income due to limitations on working.

"Potentially polluting firms seeking to maximize profits will be concerned with the liability of toxic releases and the threat such releases pose to their financial results," said co-author Dr. Anita Schiller, of Lancaster University. "They will therefore take into account the demographics of an area when valuing the legal costs and compensation they would have to pay out in the event of a toxic release, and balance this with the cost of reducing the likelihood of such a release.

"In areas where there is a higher income and higher property prices, compensation levels will go up in the event of an incident, with the possibility of collective action by residents and businesses also increasing. Potentially polluting firms must also consider the [financial risk](#) of a release and the costs of managing such an incident's likelihood."

The researchers found that levels of toxic release had declined steadily since 2000—by 34% between 2000 and 2006 and by a further 21% since 2006—but suggested this drop was not uniform, with potentially polluting firms reducing releases through [waste](#) management where local opposition to their presence was the highest.

Co-author Dr. Aurelie Slechten added: "Combined with our finding that economic activity and local [income](#) are linked with spending on [waste management](#) and with levels of toxic releases, this implies that the group most affected by releases will be poorer populations in industrial areas.

"Without further action, the disparity in exposure to toxic releases faced by certain groups will not be reduced by simply requiring that firms report their releases. Serious thought needs to be given to regulation on compensation schemes."

More information: Dakshina G. De Silva et al, Firm Behavior and Pollution in Small Geographies, *European Economic Review* (2021). [DOI: 10.1016/j.eurocorev.2021.103742](https://doi.org/10.1016/j.eurocorev.2021.103742)

Provided by Lancaster University

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