Public Health Impacts of Acute Petroleum Releases Using Data from the National Toxic Substance Incidents Program, 2010

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ABSTRACT

Introduction
In January 2010, the Agency for Toxic Substances and Disease Registry implemented the National Toxic Substance Incidents Program (NTSIP) to conduct surveillance of public health consequences of acute hazardous substance incidents. Unlike its predecessor, the Hazardous Substances Emergency Events Surveillance system, NTSIP captures all chemical releases, including petroleum only releases that result in a public health action (e.g. evacuations or injuries). Petroleum’s explosive nature creates a high risk of serious morbidity, mortality, and property loss. Additionally, it can adversely impact the environment (e.g., Deep Water Horizon oil spill). In this analysis, we describe the public health impact of petroleum incidents.

Methods
We analyzed the seven state NTSIP dataset for single substance incidents in 2010 involving petroleum. To identify petroleum incidents, we queried the chemical name variable for petroleum fuels; including, but not limited to, gasoline, diesel, kerosene, propane, and natural gas.

Results
Of the 2,803 single chemical releases that occurred in 2010, 345 (12.3%) involved petroleum. A majority of the petroleum events occurred at fixed facilities (79.4%). Fires and/or explosions were involved in 13.0% of the events. Approximately 18.2% of the events occurred in private residences or vehicles. Of the 278 events that included an industry type, utilities were the most commonly reported (33.1%). Evacuations occurred in 63.5% of the events affecting 9,395 persons. Sixty-two events (18.0%) resulted in 116 injured persons and five fatalities.

Discussion
The utility sector (e.g., natural gas distribution and electric power generation) constituted about a third of all petroleum incidents and should be the main focus of prevention outreach. Recent high profile incidents have increased the awareness of the dangers associated with petroleum releases. Data gained from this analysis, and other, more in-depth reports can to guide prevention efforts.

Conclusion
Because of the potential dangers caused by these incidents, efforts should continue to find alternatives to petroleum, where practical. Additionally, strong efforts to improve safety, including the safety culture, training, and equipment design and maintenance are crucial for preventing loss of life and property.