Database of Industrial Environmental Disasters and Non-violent Protest

Miriam Matejova, PhD

Masaryk University

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Title: Database of industrial environmental disasters and non-violent protest

Author: Miriam Matejova, Masaryk University

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Description: The Database of Industrial Environmental Disasters and Non-violent Protest presents data on the occurrence and size of industrial environmental disasters and associated peaceful protests in OECD countries. Other information includes the source and type of pollution and location of the incidents. The database contains four types of acute (i.e., sudden-onset) disaster events: oil spills, chemical spills, mining leaks, and nuclear accidents. Together, these events occurred across 27 countries over the past 117 years (1907-2024). The database also contains information on the occurrence, size, and location of protests that occurred in response to these disaster events.

Variable definitions

Sources

Oil and chemical spills

The list of oil and chemical spills is based on data from the US National Oceanic and Atmospheric Administration (NOAA)'s incident database (available at https://incidentnews.noaa.gov/raw/index). This database (1957 to present) contains information on oil spills and other incidents for which NOAA has provided assistance (i.e., scientific support for response). For a more complete dataset, NOAA's data were cross-referenced with ITOPF's oil spill statistics (http://www.itopf.com/knowledge-resources/data-statistics/statistics), CEDRE's comprehensive database (1917 to present) of oil and chemical spills in waters around the globe (available at https://wwz.cedre.fr/en/Resources/Spills), and an Internet search. Specific sources are provided in the spreadsheet. Only incidents that occurred in the OECD countries (members at the time of the spill) are included in the dataset.

Excluded from the NOAA list are "entangled whale" incidents, "mystery" substances, incidents due to hurricanes, incidents without (sufficient) information, and no volume spilled. Also omitted are negligible spills (i.e., around 1,000 gallons and less) and spills from fishing vessels, plane crashes, ferries, unidentified abandoned vessels, research vessel, USS accidents, navy infrastructure, road accidents, and personal pleasure vessels such as yachts.

NOAA incidents database includes brief descriptions of the event. While for many events the volume of pollution is provided, these volumes sometimes refer to either the amount that the vessel carried (but not necessarily spilled) or it is the worst-case scenario in a trajectory analysis. Incidents with potential volumes spilled are excluded from this dataset.

During some chemical and oil spills, material spilled into a containment area. These incidents are not included in this database unless the material spilled past the containment area and into the surrounding environment.

Mining leaks

The data on mining disasters were initially based on a US Centers for Disease Control and Prevention (CDC) database (available at https://www.cdc.gov/niosh/mining/statistics/content/allminingdisasters.html), which contains all mining disasters in the USA from 1839 to present. However, the database is limited in its focus; it appears to be concerned with human fatalities rather than environmental disasters. The Canadian Disaster Database (available at https://www.publicsafety.gc.ca/cnt/rsrcs/cndn-dsstr-dtbs/index-en.aspx) contains data on natural and technological disasters by province between 1900 and present, but, like the CDC database, its focus is on fatalities. Therefore, the mining data were supplemented and cross-referenced with data from other sources and especially the WISE Uranium Project (available at http://www.wise-uranium.org/mdaf.html). Specific sources are provided in the spreadsheet.

Nuclear accidents/disasters

Since the International Atomic Energy Agency (IAEA) does not maintain a database of nuclear disasters, the list is based on data from the Laka Foundation (available at https://www.laka.org/docu/ines/location/north-america) as well as other sources that are provided in the spreadsheet. Excluded from the Laka data are INES 0 events, malfunctioning of equipment during normal operations, and lost packages. Also excluded are events with no impacts on the environment (i.e., no external release of radioactive material).

General Notes

In the "protest" column (J), N/A stands for "data not available" due to lack of available information on protests that could be linked to the related disasters. If any such undocumented protests occurred, it is likely that they were very small in size – small enough to not warrant much media attention.

Variables

Disaster (dis)

Event as named in the original database/source. Only environmental disasters (i.e., those that affect mostly the environment) from human-made sources are included. These are sometimes referred to as industrial or technological disasters with environmental impacts. Only acute (or sudden-onset) disasters are included.

Nickname (nick)

Abbreviated incident name.

Type (type)

Disaster type. There are four types of environmental industrial disasters: oil spills (OIL), chemical spills (CHEM), mining leaks (MINE), and nuclear disasters (NCLR).

In this database, oil includes crude and refined oil as well as natural gas. Chemical spills include all other chemical substances. Mining leaks include substances from the mining processes. Nuclear events include radioactive leaks (not nuclear waste).

Source (source)

Source of pollution. Categories (adapted and standardized from the original databases/sources):

- OIL and CHEM: drilling rig; equipment; facility (includes power plant, fueling facility, storage tank, refinery, terminal); oil field; pipeline; platform; pump; tanker (oil tankers

but also chemical tankers if they leaked oil); train; transmission line; vessel (includes bulk carrier, barge, tug, tow boat, container ship); vehicle; well
- MINE: facility
- NCLR: facility

Maximum size (maxsize)

For oil and chemical spills, size is measured in US gallons as per the NOAA database. Incidents from other databases are reported as per the original data source. Different measures (tonnes, cubic meters, containers, etc.) are given in the dataset where applicable. Values are rounded.

For mine leaks, size is in cubic meters unless otherwise stated as per the original source.

For nuclear events, size is measured on the INES scale. The scale was introduced by the International Atomic Energy Agency in 1990 as a tool to communicate the "safety significance" of nuclear events. The scale consists of seven levels where 0 to 3 are considered incidents, while 4 to 7 are accidents. With respect to the accident levels, 7 corresponds to a major accident, 6 to a serious accident, 5 to an accident with wide consequences, and 4 to an accident with local consequences. The INES scale is available at: http://www-ns.iaea.org/tech-areas/emergency/ines.asp

Substance (substance)

Based on the categorization in the original data source and standardized to reduce the number of categories:

- OIL: bitumen; condensate (natural gas, crude oil, oil condensate); crude oil (includes light, heavy, petroleum, and specific types of crude oil based on the origin); diesel; drilling mud; gasoline; kerosene; natural gas; naphta; oil (includes aviation fuel, bunker oil, cooking oil, heating oil, light and heavy fuel oil, lubrication oil, mineral oil, jet fuel, slurry oil, vacuum gas oil, waste oil); petrol
- CHEM: listed as originally recorded
- MINE: listed as originally recorded

Date (date)

Date of occurrence as recorded in the original database/source. Time period is given for multi-day incidents.

Location (location)

Location of the incident as recorded in the original database/source.

Protest (protest)

Denotes whether any non-violent protest occurred: YES, NO, N/A (no data).

Protest activity refers to peaceful/non-violent demonstrations. Data were gathered from a systematic search of LexisNexis Academic (now Nexis Uni) and supplemented by scholarly literature. Specific sources are provided in the spreadsheet.

Nexis Uni (former LexisNexis) was used to search for information on any protest linked to the respective event. Search keywords:

- For oil spills: name AND oil spill AND protest
- For chemical spills: name AND protest
- For mining leaks: name AND protest
- For nuclear events: name AND nuclear AND protest

For incidents with generic names such as barge numbers, the location of the incident was used instead of the name.

The time period for the search was one year, starting with the date of the event. Anniversary protests are excluded.

Protest size (protsize)

Sizes are the maximum size on record based on the newspaper source. Size was coded as unknown if protest was mentioned in a news article but with no reference to size (qualitative or quantitative).

Protest Location (protloc)

Protest location (linked to the largest protest) as reported in the news article.