

I Am 95% Confident That Process Safety Accident Rates Are No Longer Improving

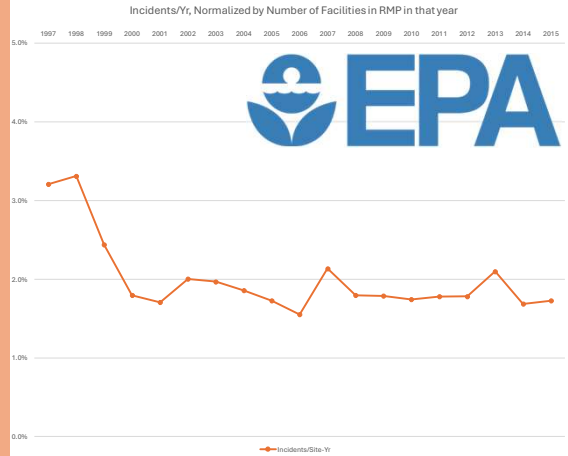


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ABSTRACT

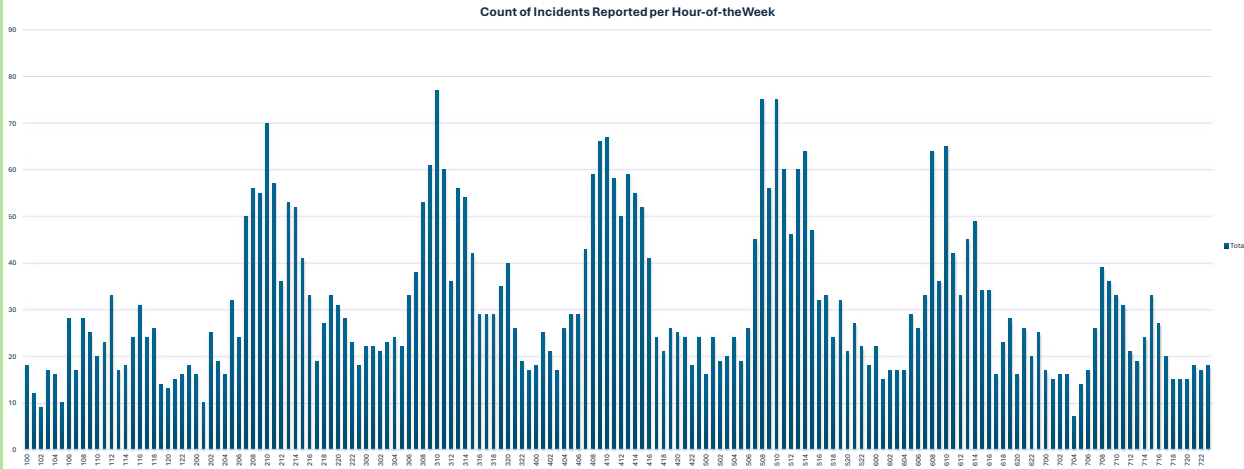
One of the requirements of the Environmental Protection Agency's (EPA) Risk Management Program (RMP) is that all "covered" facilities must report any process safety accident that meets EPA's well-defined criteria. This requirement extends back to 1994. Thus, the EPA has been collecting a well-defined dataset of significant accidents across approximately ten thousand facilities for more than 30 years.

Analyzing this dataset has identified a few interesting trends and patterns. For example, while the number of reported accidents per year has been decreasing, so has the number of covered facilities. Thus, the accident rate per covered facility has remained steady within a narrow band with an average of 1.8 accidents reported per 100 covered facilities per year. In other words, **accident rates hit a plateau - for RMP-covered facilities at least - more than 20 years ago.**

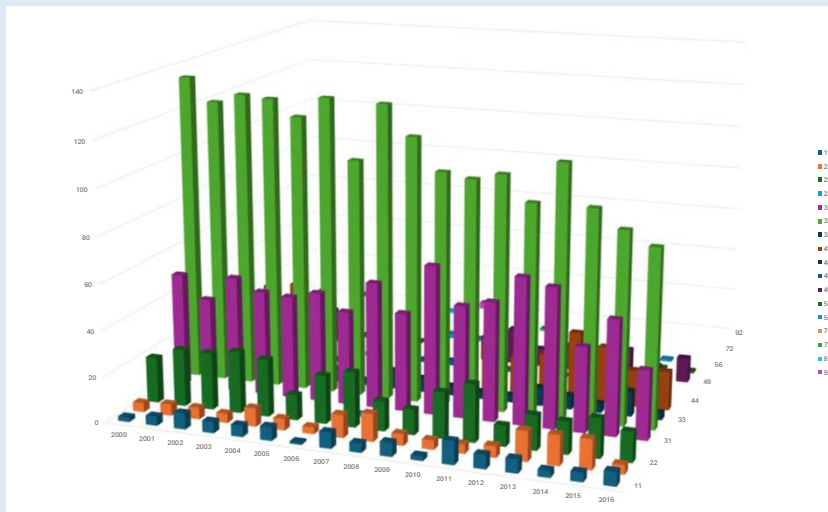


Looking deeper within the data, there appears to be a distinct **pattern of accidents occurring on weekday mornings**, with a peak around 10AM local time each day. Only a fraction of accidents occurred at night or on the weekend.

This appears to fit with the well-established pattern of accidents being more likely during startup, shutdown or maintenance – especially if there has been some sort of **change**. Given that maintenance work is far more likely to begin on weekday mornings, we would expect to find such a pattern – though perhaps not as striking as the RMP accident data shows. This pattern may point toward an area of focus on **"Control of Work"** Practices to reduce accidents in the future.



RMP data includes the **North American Industrial Classification System (NAICS)** code. Thus, accident rates can be subdivided to compare within and between industries. Facilities in at least one NAICS code appear to have been improving, while facilities in other NAICS codes have recently been reporting more events per year than in the early days.



NAICS Code	2022 NAICS Title
11	Agriculture, Forestry, Fishing and Hunting [†]
21	Mining, Quarrying, and Oil and Gas Extraction [†]
22	Utilities [†]
23	Construction [†]
31	Food, Beverage, Textiles Manufacturing [†]
32	Wood, Paper, Chemicals Manufacturing [†]
33	Metals, Electronics Manufacturing [†]
42	Wholesale Trade [†]
54	Professional, Scientific, and Technical Services [†]
56	Administrative and Support and Waste Management and Remediation Services [†]
71	Arts, Entertainment, and Recreation [†]
72	Accommodation and Food Services [†]
81	Other Services (except Public Administration) [†]