

PRD Requirements

- The Final Rule imposes a work practice standard for PRDs that vent to the atmosphere that requires owners and operators to implement at least three prevention measures, perform root cause analysis and corrective action in the event that a PRD does release emissions directly to the atmosphere, and monitor PRDs using a system that is capable of identifying and recording the time and duration of each pressure release and of notifying operators that a pressure release has occurred. Compliance will require Indorama to install triple-redundancy safeguard systems and process monitoring devices for each affected PRD. The type of specialized monitoring devices required by the Final Rule will require significant time to source and obtain, easily exceeding the deadline in the HON.
- In the Final Rule, also makes it a violation to vent PRDs in ethylene oxide service to the atmosphere. PRDs are required to be connected to a control device or flare. This poses a serious safety hazard because the reactors at the Port Neches Facility operate under pressure and are protected by PRDs in order to prevent catastrophic damage should an upset condition arise necessitating immediate depressurization. Indorama does not vent vapors from the reactors during normal operations. The Port Neches Facility has redundant safeguards in place to minimize the use of PRDs. PRDs installed on the ethylene oxide reactors at the Port Neches Facility are the last safeguard and are designed to vent to the atmosphere only when truly needed.
- Thus, the PRDs serve only as pressure protection devices for the reactors during process upsets. The PRDs are closed at all times except when called upon by rare upset conditions that require immediate depressurization to protect the reactors or downstream equipment. An example of an upset condition is when there is an electrical power outage or an over-pressurization due to increased catalytic activity. Even then, venting to the PRDs is limited to the reactors that are impacted by the electrical power outage or individual catalyst activity.
- The effective ban on the use of the PRDs for their intended purpose as safety devices venting directly to the atmosphere would potentially require Indorama's reactors to be modified and/or reengineered. Such modifications and/or reengineering will be extremely difficult (if even possible) because the design of the ethylene oxide reactors and their associated PRDs was deliberate and necessary for safe and efficient operation. The design and installation of the PRDs was based on safe engineering design following API and ASTM standards, as well as rigorous process safety evaluations.
- When most of the reactors were constructed, engineering evaluations determined that it would be unsafe to connect the outlet of these devices to a control device. It was determined that, in doing so, either the device exhaust would be restricted so as to interfere with the rapid de-pressurization and thereby compromise the integrity of the vessel being protected, the downstream piping to the control device could be damaged, or combustion could occur.
- For example, routing the discharge of a PRD to a flare header, which operates at a higher pressure than atmospheric pressure, would increase the backpressure on the