# Inert materials and nonchemical effects: nitrogen backfill exceeds atmospheric pressure

Table 10-7

It is useful to provide examples when inert materials and nonchemical effects are involved, such as a blowout of a window in an ultrahigh vacuum system due to pressure buildup during backfill with nitrogen.

| **Division:**  **Materials Science** | | **Description of Operation:**  **Backfill of nitrogen into ultrahigh vacuum system** | | | **By:**  **Date:** |
| --- | --- | --- | --- | --- | --- |
| **What if?** | **Answer** | | **Probability** | **Consequences** | **Recommendations** |
| Nitrogen backfill exceeds atmospheric pressure | Windows in vacuum system could blow out if moderate positive pressure is applied. (The system can see very low negative pressure but only modest positive pressure.) | | Very likely at modest positive pressure | Severe, if personnel located in front of window at time of failure; equipment damage and downtime | Install pressure relief on nitrogen backfill line based on understanding of window failure pressure and backfill pressure requirement |

This file is excerpted from “Identifying and Evaluating Hazards in Research Laboratories: Guidelines developed by the Hazard Identification and Evaluation Task Force of the American Chemical Society’s Committee on Chemical Safety”.

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