

Health & Safety RISK Challenges *Across the Battery Chemical Value Chain*

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RISK SCENARIOS



Group of Employees

- A group of 4 complains of symptoms over a 3 week period. “They’re wearing their PPE.”
- Nobody knows specifically what to do. Send them to “The Clinic”: It’s “poisoning”—remove from work. Some see their family physician (NP). One orders a heavy metal blood test and it’s “abnormal.”
- OSHA gets called.
- Media finds out.



Regulatory Compliance

- New cathode material (NMC variant).
- EPA (TSCA): PEL = 0.0000643 ug/m³. Basis: “nickel causes cancer in rats.” OSHA has no input or purview.
- \$MMM for unplanned engineering controls, PPE, and hazardous waste disposal.
- Margins go down. Investors and Wall Street get upset.
- Media finds out.



The Lawyers

- New material and process.
- Company attorney and outside counsel: “In OSHA compliance.” SDS by foreign manufacturer: “No known health effects.” Use “respirators and gloves.”
- 6-13 years later: 19 separate occupational disease workers’ comp claims are filed. Insurer refuses to cover (“no causal evidence; late filing; no reserves”).
- Third party class action lawsuit. Original lawyers long gone. Officers and Directors directly liable.
- Media finds out.

When Risk is NOT Predictably Managed, It Turns into FUD: Fear, Uncertainty and Doubt

DETERMINANTS OF RISK MANAGEMENT



Population Health/Disease vs. Individual Injury



Regulatory Compliance vs. Risk Management



Reputational Risk vs. ESG

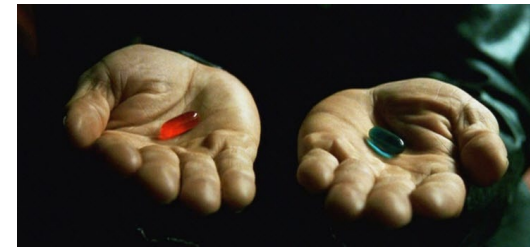


Health/IH vs. 'Safety'



Human vs. Non-human/theoretical Toxicity

INDUSTRY RISK OPTIONS



Traditional



REACTIVE



ONE-AT-A-TIME



UNPREDICTABLE



TEMPORARY

Best Practice



PROACTIVE



POPULATION



PREDICTIVE



PERPETUAL

Objective: Transform risk management methods and requirements from **compliance-driven, individual** outcome or tasks with minimal preventive capability into a **risk management process** directly linked to aggregate prevention and corrective actions

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