



Asset Protection, TUR and Sustainability

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Sustainability

- Ultimate goal is a **sustainable society**

- Sustainable:
 - Economy
 - Environment
 - Business
 - Company
 - Process

- We must move away from Take / Make / Waste norm
 - Extraction, Production, Discard*

*Dr. Peter Senge - MIT
“The Necessary Revolution”

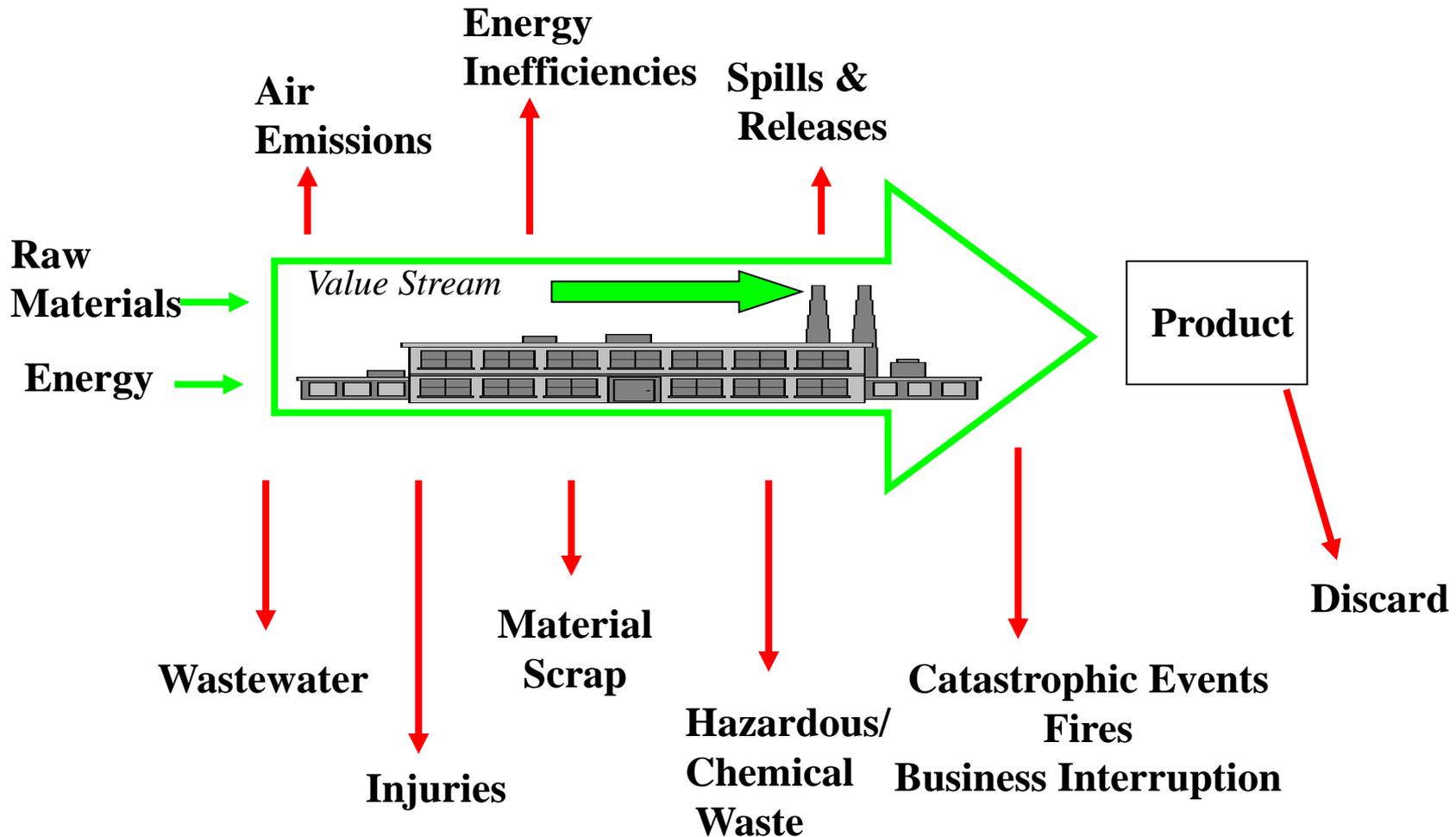
Take / Make / Waste Model

Extraction , Production, Discard

**EXTRACTION*

PRODUCTION

USE / DISCARD



Central Chemical Management

- Third party maintains centralized chemical warehouse (hub)
- Uniquely incentivized partnership
 - Increase chemical use efficiency
- Just in time delivery to factory
 - Reduced labpacked wastes due to shelf-life issues
- Comprehensive chemical use inventory / history
 - Facilitates “targeted” chemical use reduction initiatives
- Fewer chemicals on-site therefore less:
 - Risk of fires, employee exposures, risk of spills / releases

Central Chemical Management Lowers Asset Protection Risk

- Protection of:
 - People- your most valuable asset
 - Buildings / Infrastructure
 - The environment
 - Product
 - Inventory- parts/finished goods, WIP, customers' parts
 - Business continuity
 - Earning potential



Asset Protection, TUR and Sustainability

- Business Continuity
 - Lessened risk of business interruption = sustainable business

- Interdependency
 - One plant's products feed many (25 to 1 ratio in some cases)
 - Interdependency is considered by risk insurers that are covering business interruption costs

Company Vision

Be the most admired defense and aerospace systems supplier through world-class people and technology.

EHS Vision

Assure customer success by being a world leader in the protection of people, property, and the environment.

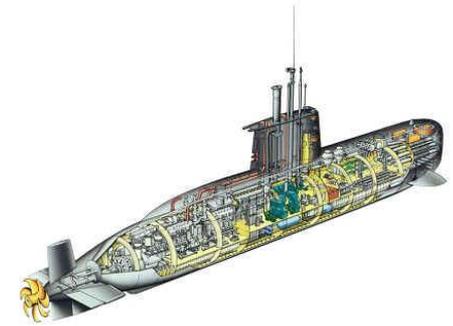
TUR Ethos Becomes DNA of Business

The Challenge Continues...

- Moving targets based on new information
- Innovative solutions – beware of “trade-offs”
 - 134a refrigerant – cars and homes, canned air in industry
- Health and safety risks drive focus areas
 - Ozone depletion
 - Be, Cd, Pb, Hg
 - Cr+6 – lowered exposure allowances
 - Global Warmers
 - Sulfur hexafluoride (SF6), 134a refrigerants, Fluorinerts,
- Material characteristics result in use “addictions”

Sulfur Hexafluoride Usages and TUR

- SF6 desirable characteristics:
 - Inertness, large molecule, good material compatibility, non-electrically conductive, colorless, odorless, non-flammable, non-corrosive
- Raytheon
 - Usage in underwater sonar devices
 - Implemented a closed-loop testing process
 - High voltage testing chamber (arc protection)
 - Implemented a recovery system for spent SF-6 mixture
- Nike
 - SF6 = “air” in Air Jordan sneakers
 - Major company effort eliminated SF6 and substituted it with “AIR”



134a Usages and TUR

- 134a was the prime substitute for CFC 11 and 12
 - Classic “trade-off” example....ODP for GWP
 - Household refrigerators, auto air conditioners, canned air propellant
 - Desirable characteristics include: non-flammable, low toxicity, stable, relatively inexpensive
- Raytheon
 - Usage in office areas for general keyboard cleaning
 - OfficeMax catalog ban
 - Use on circuit cards particulate removal
 - Implemented conditioned shop air
 - Usage in composites areas for removing backing
 - Substituted liquid nitrogen

