WHAT WOULD YOU DO DIFFERENT IN THE SITE LAYOUT OF THIS PLANT?

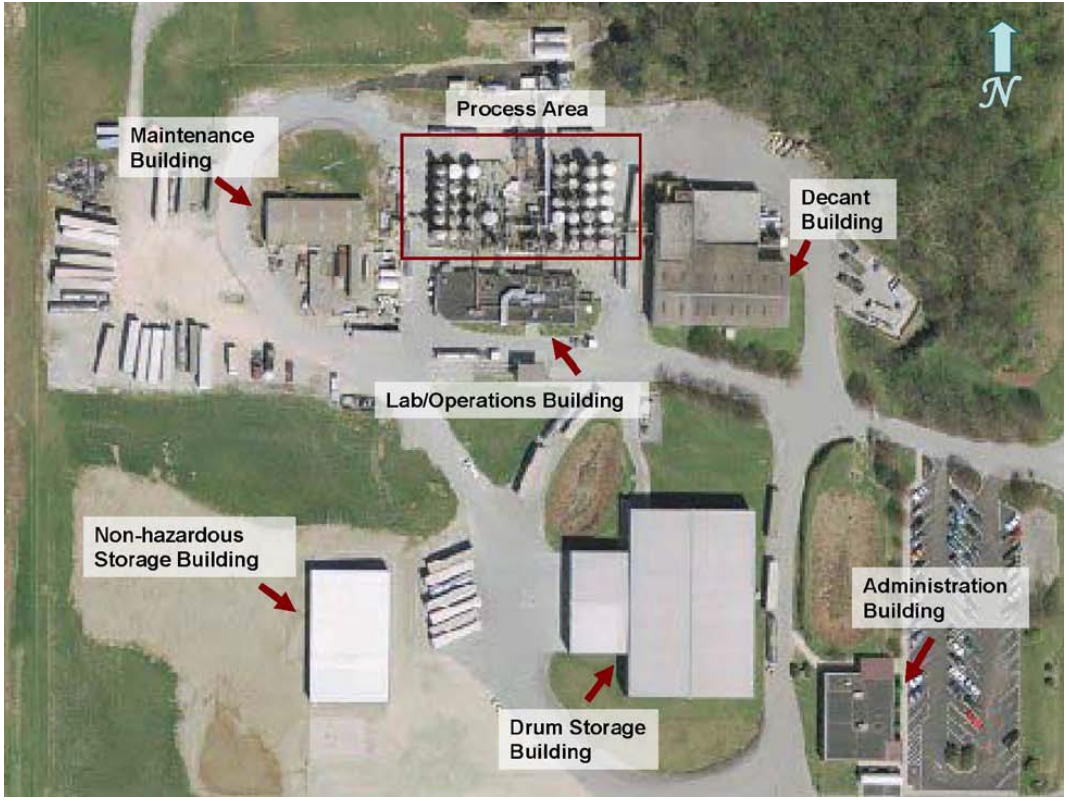


Photo Courtesy of Ohio State Fire Marshal

VEOLIA TECHNICAL SOLUTIONS LLC

PLANT AFTER VAPOR CLOUD EXPLOSION

(PICTURES FROM CSB)

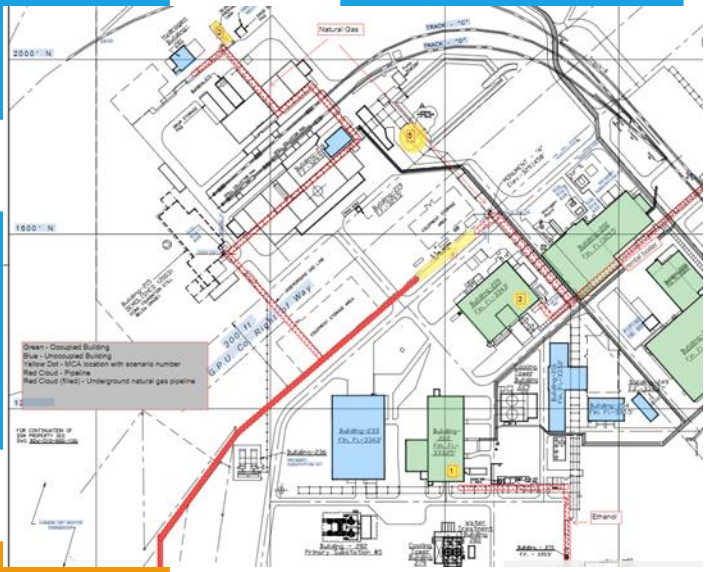
Occupied Buildings Safety

Protect people in buildings against potential consequences of major process-related incidents

“Wrong dosing, runaway”

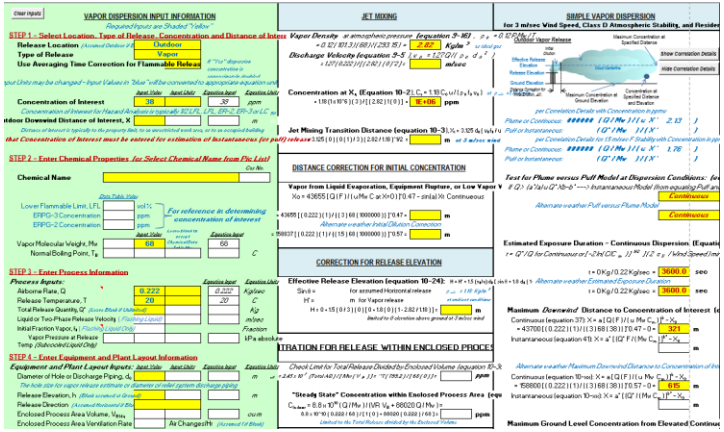
OBRA FLOWCHART

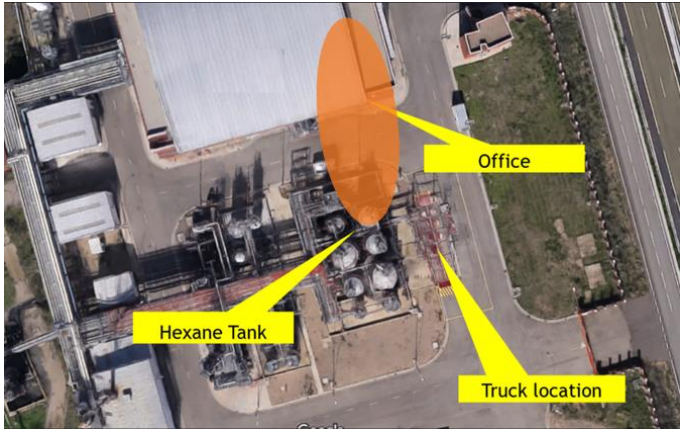
- Occupied buildings
- Hazards
- Effect calculations
- People affected
- Risk determination
- Measures
- Risk reduction



DETERMINE THE EFFECT DISTANCES BY USING TOOLS

- Expert software (e.g. PHAST, SafeSite, Effects)
- CHEF (or RAST) Excel tool –Available via CCPS and EPSC





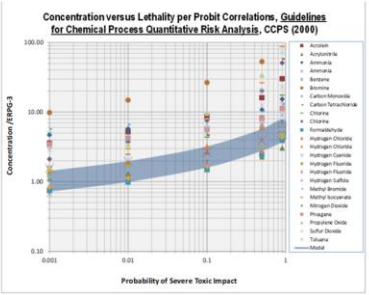
DEFINE AFFECTED NUMBER OF PEOPLE

People affected = Occupancy x vulnerability factor

Define vulnerability factor for

toxic concentration in a building

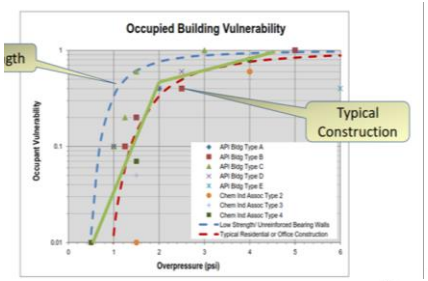
- ERPG-3 = 0%
- 5 times ERPG-3 = 100%



Define vulnerability factor for

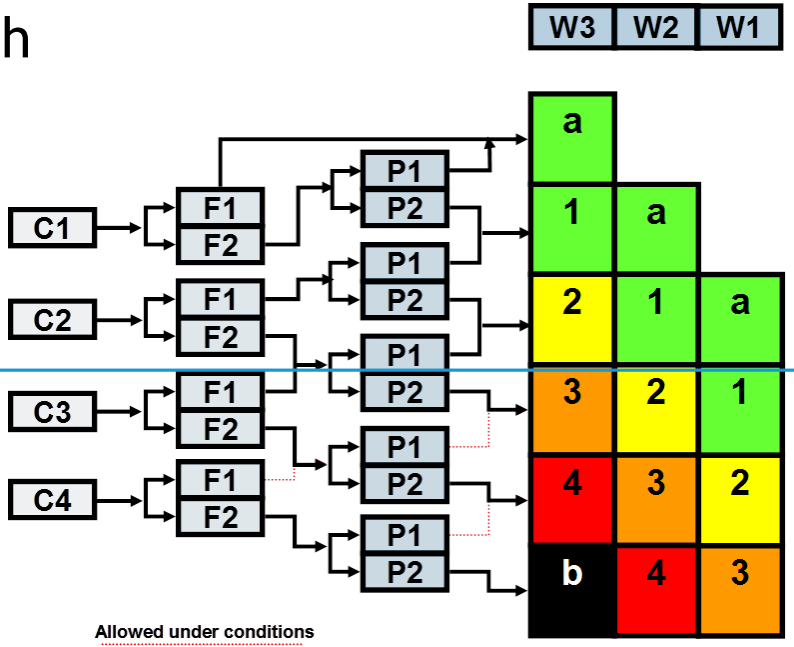
explosion pressure @ building

- 30 mbar = 0 %
- 300 mbar = 100%



DEFINE THE RISK

DSM RiskGraph



1. Identification
and areas on site
Number of hour

2. Identification o
with potential

OBRA MEASURES FOR RISK GAP CLOSING

A. Move people out of occupied buildings

B. Improve/increase the safeguarding to mitigate the risk

C. Relocate the occupied building or source of the hazard

D. Modify occupied buildings

1. Identification
and areas on site
Number of hour

2. Identification
with potential

FLIXBOROUGH, UK - 1974

OBRA RELATED INCIDENT

- Explosion equivalent to 15 Tonnes TNT
- 1,800 buildings within 1 mile radius damaged
- All 18 people in control room killed
- 500+ would have been killed during a weekday

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