

The Global Importance of Facility Siting, Community Planning and Emergency Response



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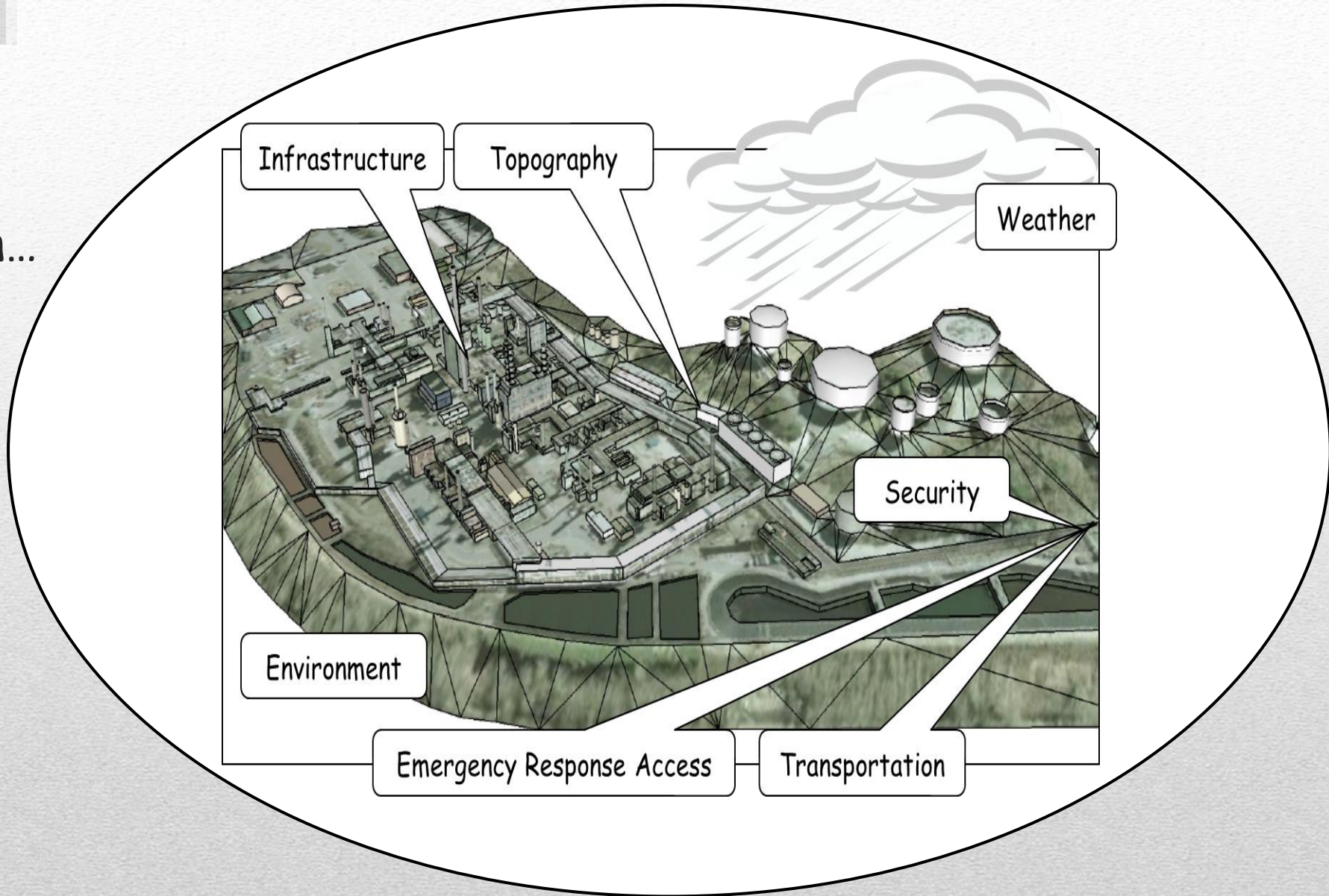


About CCPS

- Non-profit Global Organization
- Based in NYC, USA
- Began March 1985
- Vision: Protect, People Property and the Environment
- Mission: Eliminate Process Safety Incidents by being a global resource to share best practices, tools and training

Risk Considerations for Facility Siting, Community Planning and Emergency Response

The Terrain...



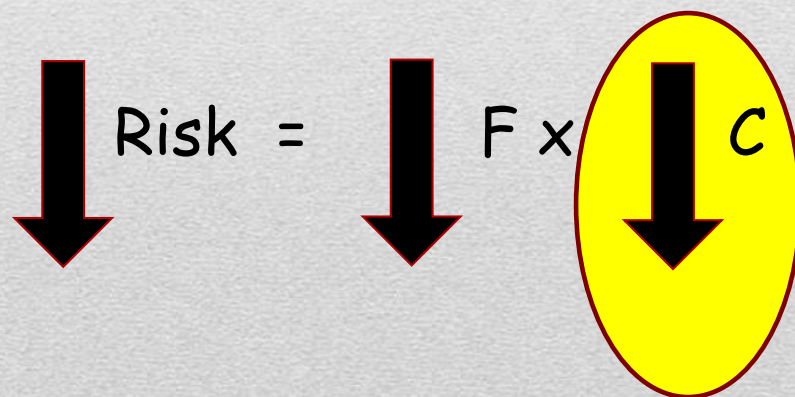
Reducing Process Safety Risks

Risk = function (Frequency times Consequence)

We reduce risk by reducing the Frequency (F) of the hazardous event.

and / or

By reducing the Consequences (C) of the hazardous event.



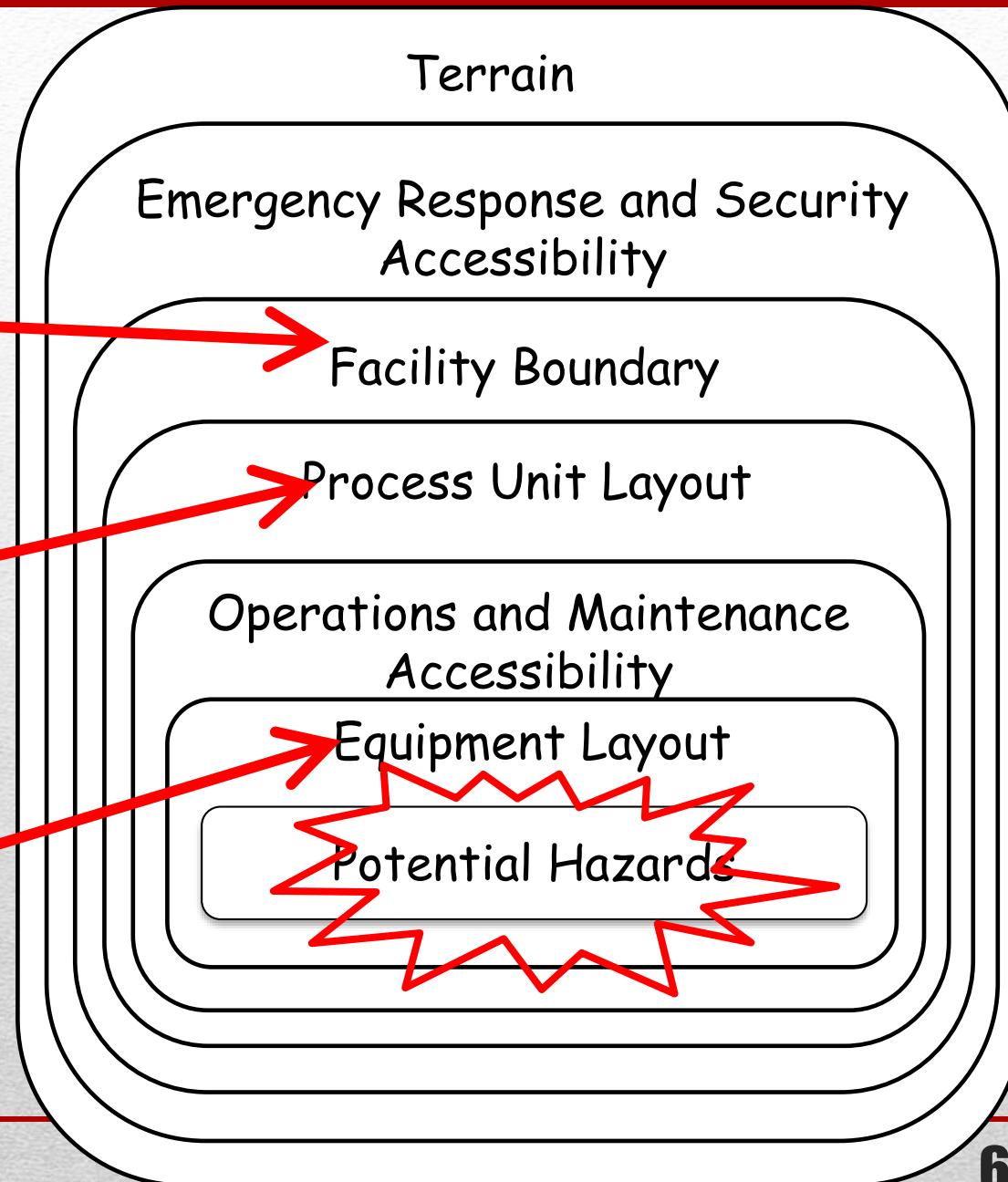
The Barrier Approach in the Guideline

Siting
(locating)
the facility

Arranging the
process units

Arranging the
equipment

Reducing consequences



Location !

Location !

Location !

Community Growth Impacts

Impact on Assets



Impact on Community



Bhopal, India

Impact on Community



**Day
Care
Center**



Zoned for Non-Hazardous Industry



Concept Sciences – Hydroxylamine Explosion Allentown, PA, USA



15 fatalities, 260 injuries, and
widespread community damage.

West Fertilizer, Ammonium Nitrate – West, Texas



1954



1970



1982



2010

West, Texas – no zoning restrictions to prevent community from growing up and around the site

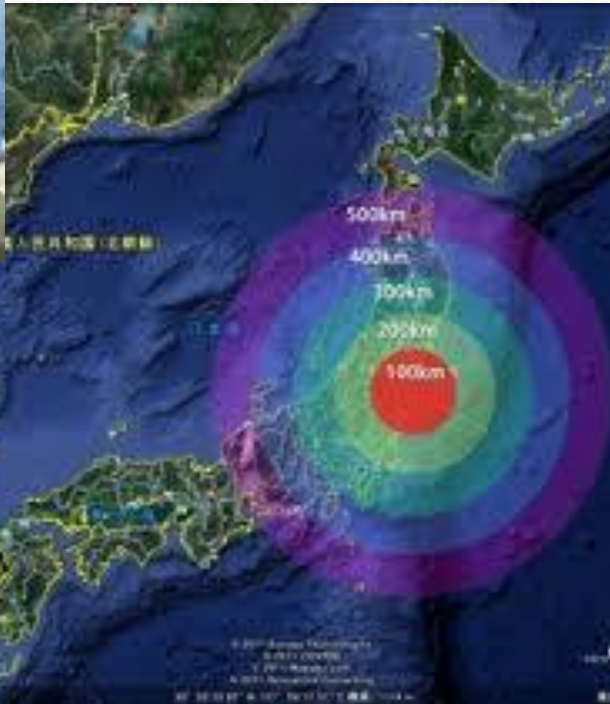


1970



2013

Severe Weather Impacts

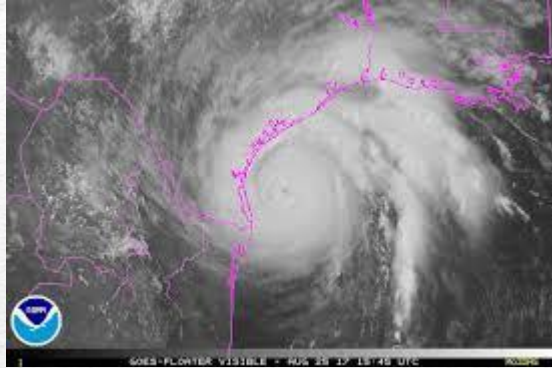


Air Photo Service/Associated Press
Nuclear reactor no. 4, left, and no. 3 on March 24.

Fukushima

COMMUNITIES

- Flood waters rose to unprecedented levels
- Much of the damage was done after the storm
- Homes and lives were destroyed



Hurricane Harvey - Houston, Texas USA

- “Floodwaters from Harvey cut electricity feeding refrigeration units used to keep the plant's tanks of volatile organic peroxide from warming and combusting.”
- “Plant workers evacuated after moving the chemicals into nine trailers”.
- First responders file suitover 'serious bodily injuries' in Houston chemical plant fire after Hurricane Harvey.”

Source CNN: Sept 7, 2017

Published on Thursday, September 07, 2017 by Common Dreams

First Responders Sue Texas Chemical Plant for 'Gross Negligence' After Fire and Explosions

"No one from Arkema warned of the toxic fumes in the air."

by Jake Johnson, staff writer



16 Comments



Questions Arise About Health Hazards From Chemical-Plant Explosions

Wall Street Journal (subscription)

September 9, 2017

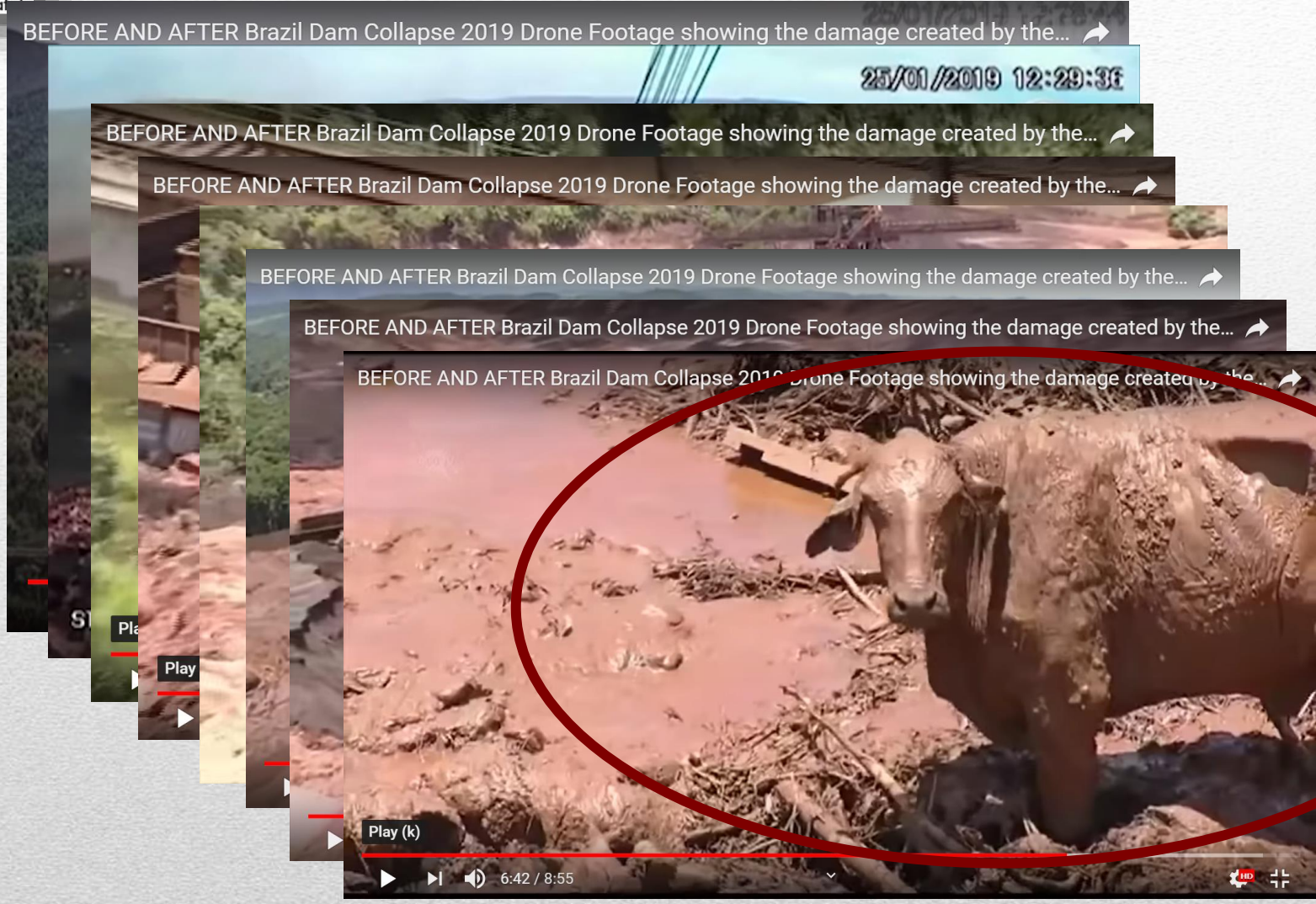
Products that potentially posed acute health hazards exploded last week at a Houston-area chemical plant after Hurricane Harvey

Hurricane Harvey – Facility Siting

Sources: CNN; Wall Street Journal; Jake Johnson, Common Dreams

Mining / Construction Site

Vale Dam Failure -



**We impact more
than just Humans**

- Implement and Enforce Zoning Rules.
- Employ facility siting in design and expansion.
- Education Emergency Responders on Hazards.
- Improve Community and Emergency Responders Risk Awareness.
- Implement Green Zone or Buffer Concept around site.
- Re-evaluate preparation, execution and mitigation of severe weather events.



<https://www.wiley.com>

So..... Where do we go from here?

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Thank you for your time and attention!