



Sustainable and Safe? Considerations for the Fashion Industry

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A member of the public is told the following:

Your yoga mat contains a chemical known to cause birth defects.

Your clothing will give you a rash.

How will the public react???



Considerations

Safety



In-house safety assessments

Sustainability



Regulatory

Consumer Product Safety Improvement Act of 2008 (CPSIA)

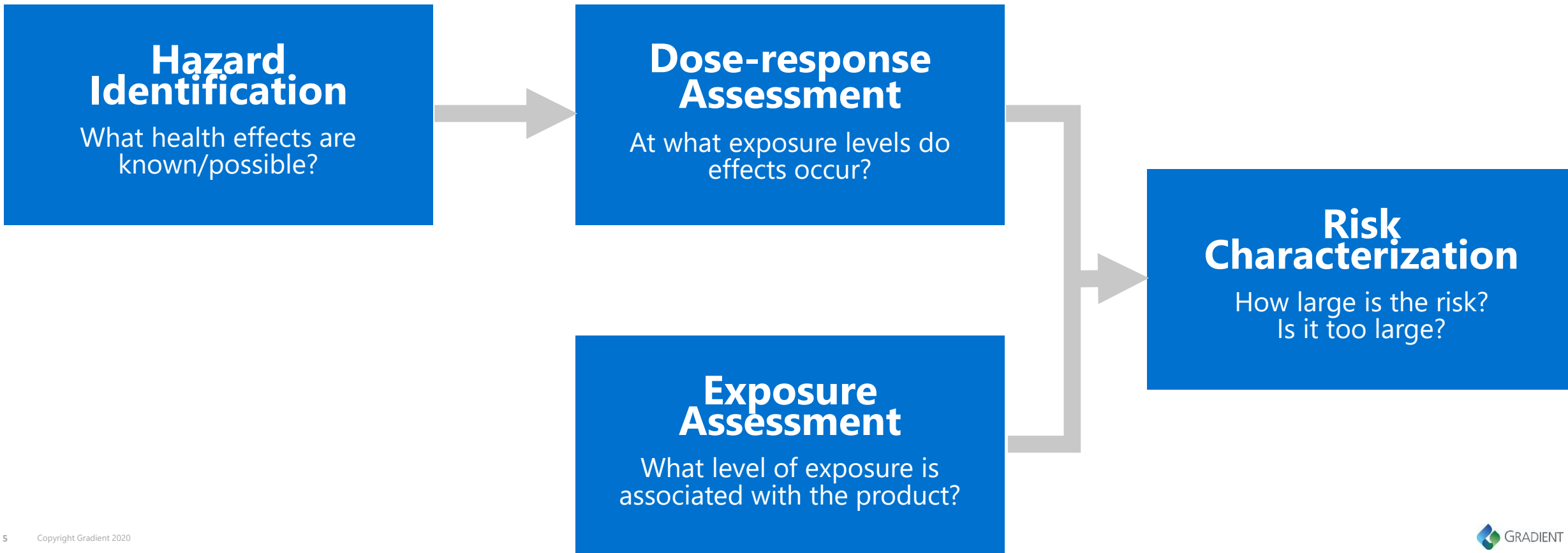
NY Toxic Chemicals in Children's Products Act



Safety Assessment 101

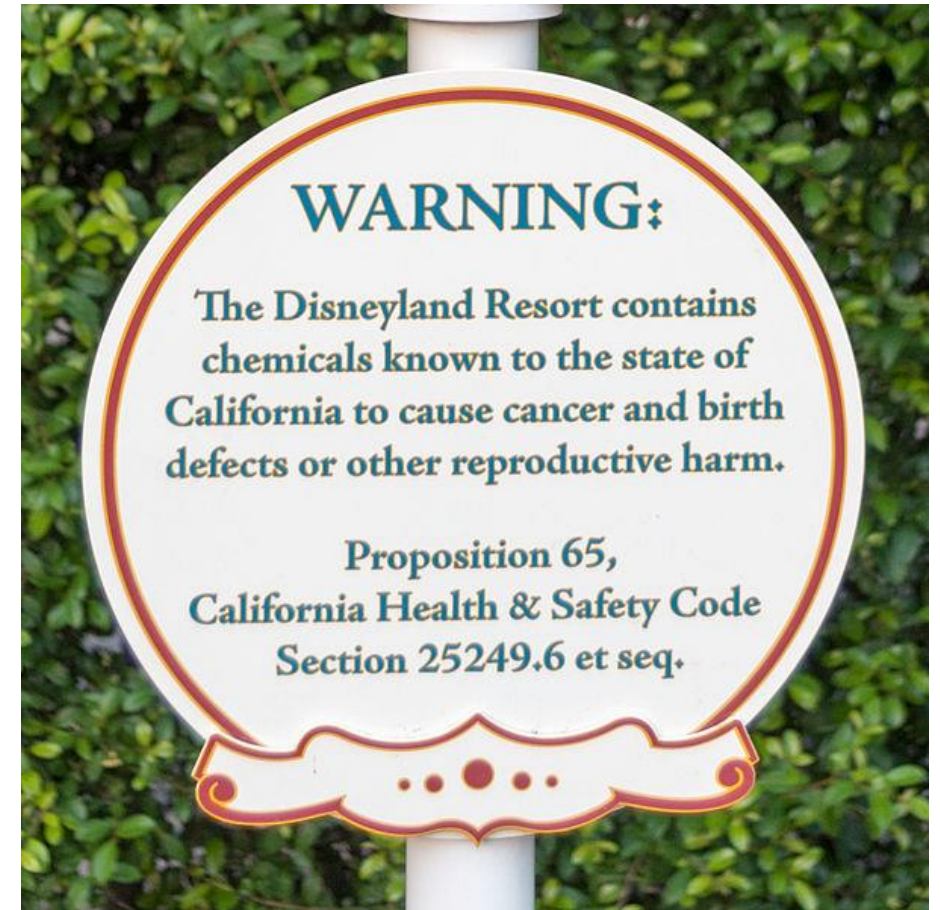
Safety or risk assessment is the process of determining the likelihood of a chemical to cause adverse health effects

The 4 Step Risk Assessment Process



Safety Assessment Case Study: California Proposition 65

- >900 chemicals are listed based on evidence of cancer and/or reproductive **hazard**
- Warning is required based on **risk** (*i.e.*, exposure to chemicals, not chemical content)
 - Warning labels required, if exposure is above the Safe Harbor Limit
- Violators face fines up to \$2500/day/product
- Defense against a lawsuit is based on risk
 - The level of exposure is below the Safe Harbor Limit, so no warning was needed, or
 - Develop a Safe Harbor Limit, if chemical does not have one
- Because assessing risk is not cheap, Prop 65 has the *de facto* effect of a **hazard-based** ban



A Prop 65 warning sign at the picnic area next to the tram area at Disneyland Resort.

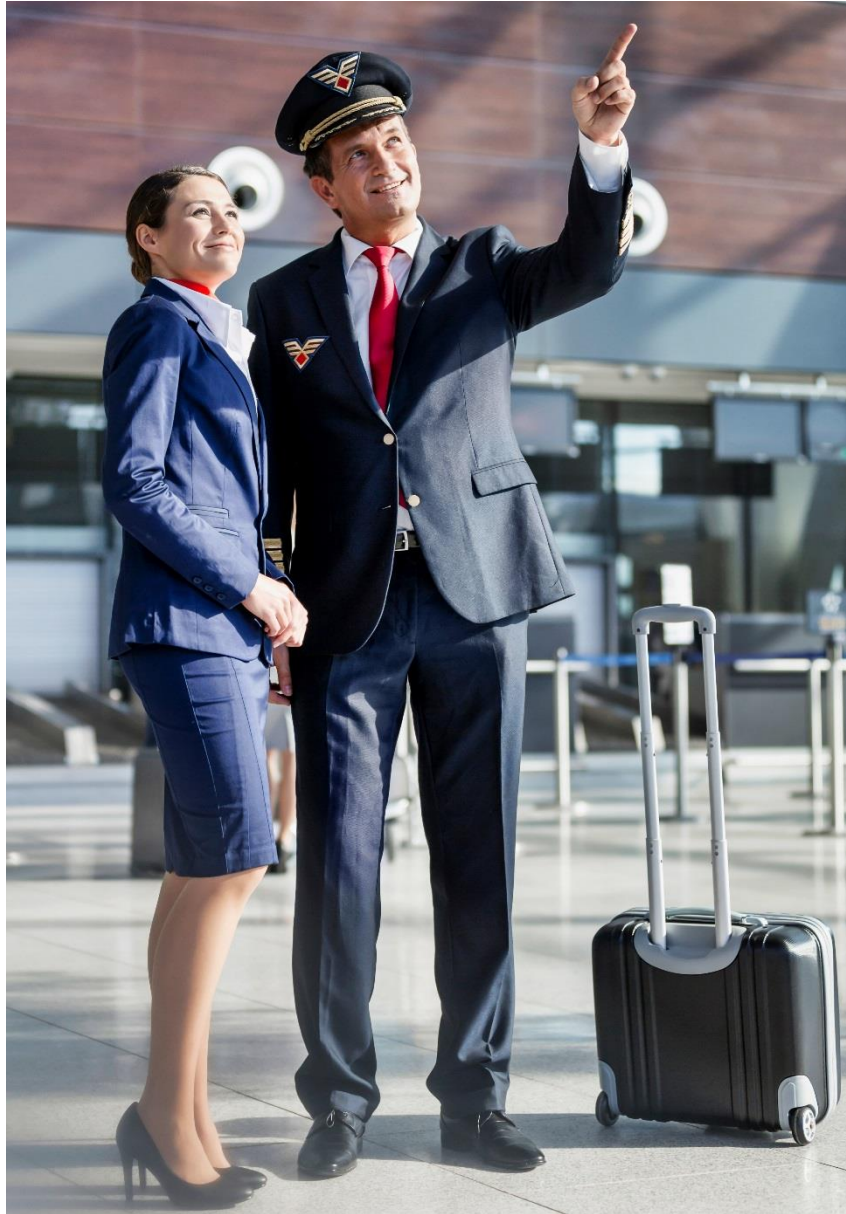
Author: Patrick Pelletier [Wikipedia](#)
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Safety Assessment Case Study: California Proposition 65 Cont.

- Fashion is not exempt from Prop 65 litigation
 - **Lead and cadmium** in clothing and accessories (fasteners, zippers, leather, snaps, rivets, polyurethane/PVC components)
 - **Phthalates** in clothing, shoes, bags (vinyl/PVC components, zipper tabs, plastic polymers)



Safety Assessment Case study: Wearable Item



What would be the possible concern?

- Skin contact with the item could result in allergic reaction, particularly in contact with sweat

Types of Chemicals that Might be of Concern

Isocyanates and
Diamines

Acrylates (in glues)

UV Stabilizers (plastics)

Dyes

Safety Assessment Case Study: Wearable Item Cont.

How would you evaluate safety?

- Saline leach testing can be used to mimic the effect of sweat on extracting chemicals from the product
- Would have to look to see if sensitizing (contact allergen) chemicals are involved
- What would be the exposure?
 - Where is the item worn? Under what conditions? Is it used with lotion or sunscreen (could enhance leaching)?
- Evaluate dose in context of sensitizing potency of the chemicals identified



Thank you!

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