



*FUTURE GAZING OF TECHNOLOGY  
FROM A LIABILITY PERSPECTIVE*

Prepared for the 8<sup>th</sup> Risk Summit  
Cambridge

June 2017

# Praedicat has built the world's first exposure-based casualty catastrophe model

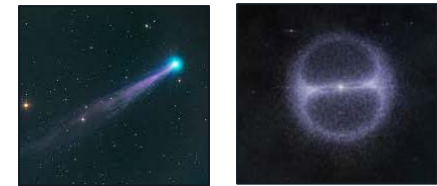


**Praedicat is a product stewardship analytics company delivering science-based forward-looking models of lifecycle product risk to corporate clients**

## Quick Facts:



Formed by RAND and RMS



Two Products: CoMeta™ and Oortfolio™

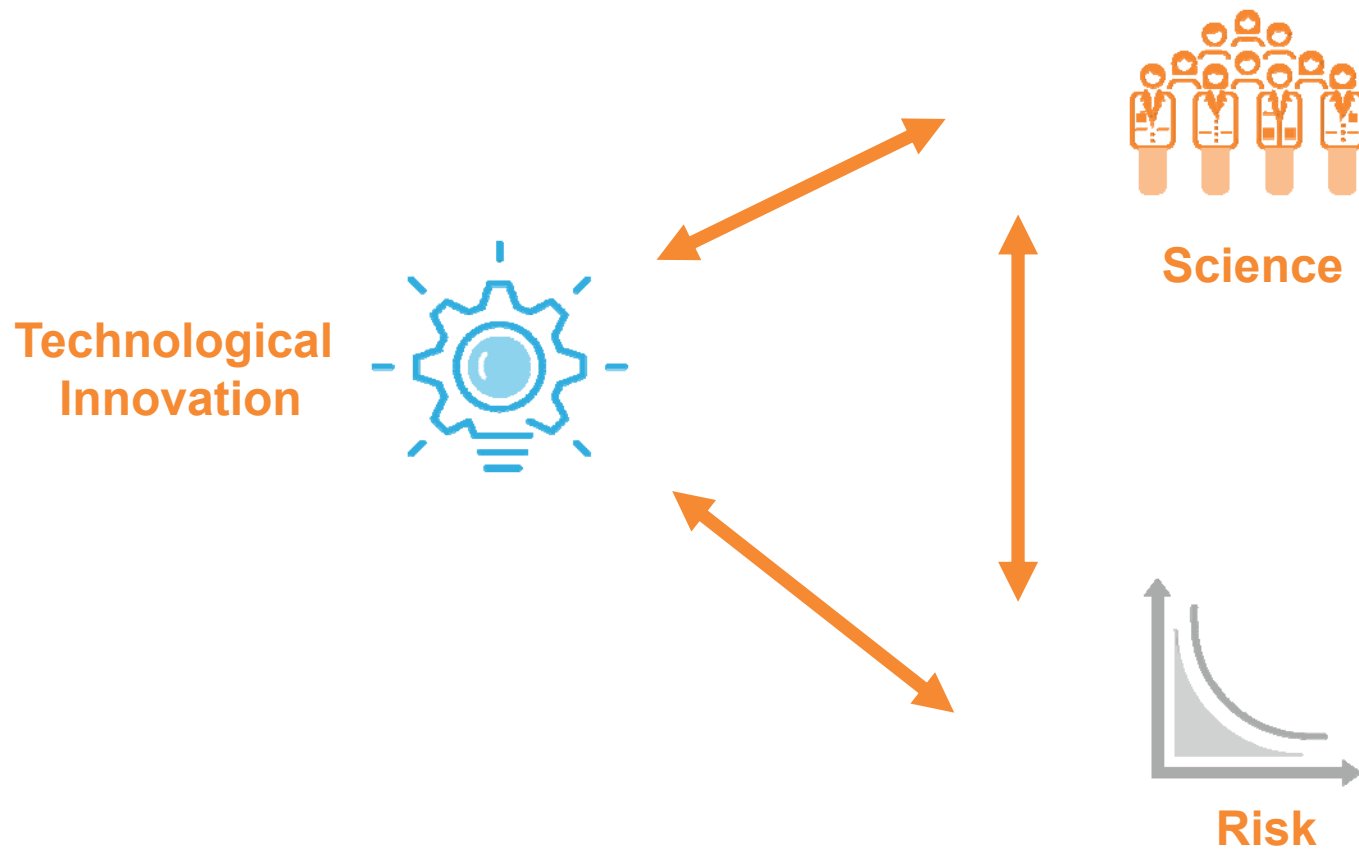


Based in Los Angeles, California

# Outline

- The Liability Accumulation Dilemma
- Modeling and Risk Insights
- The Nekomodel™: Two-Tailed Cat Model
- Results: What Are the Biggest Risks?
- The Future

# Emerging risk is an inherent part of innovation



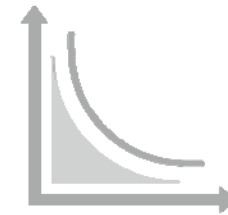
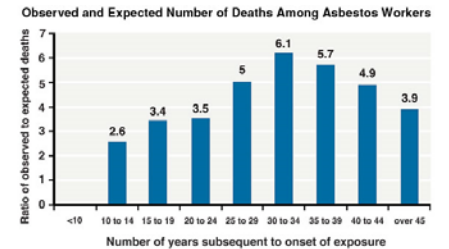
# As the risks emerge, the aggregations can be catastrophic



Technological Innovation



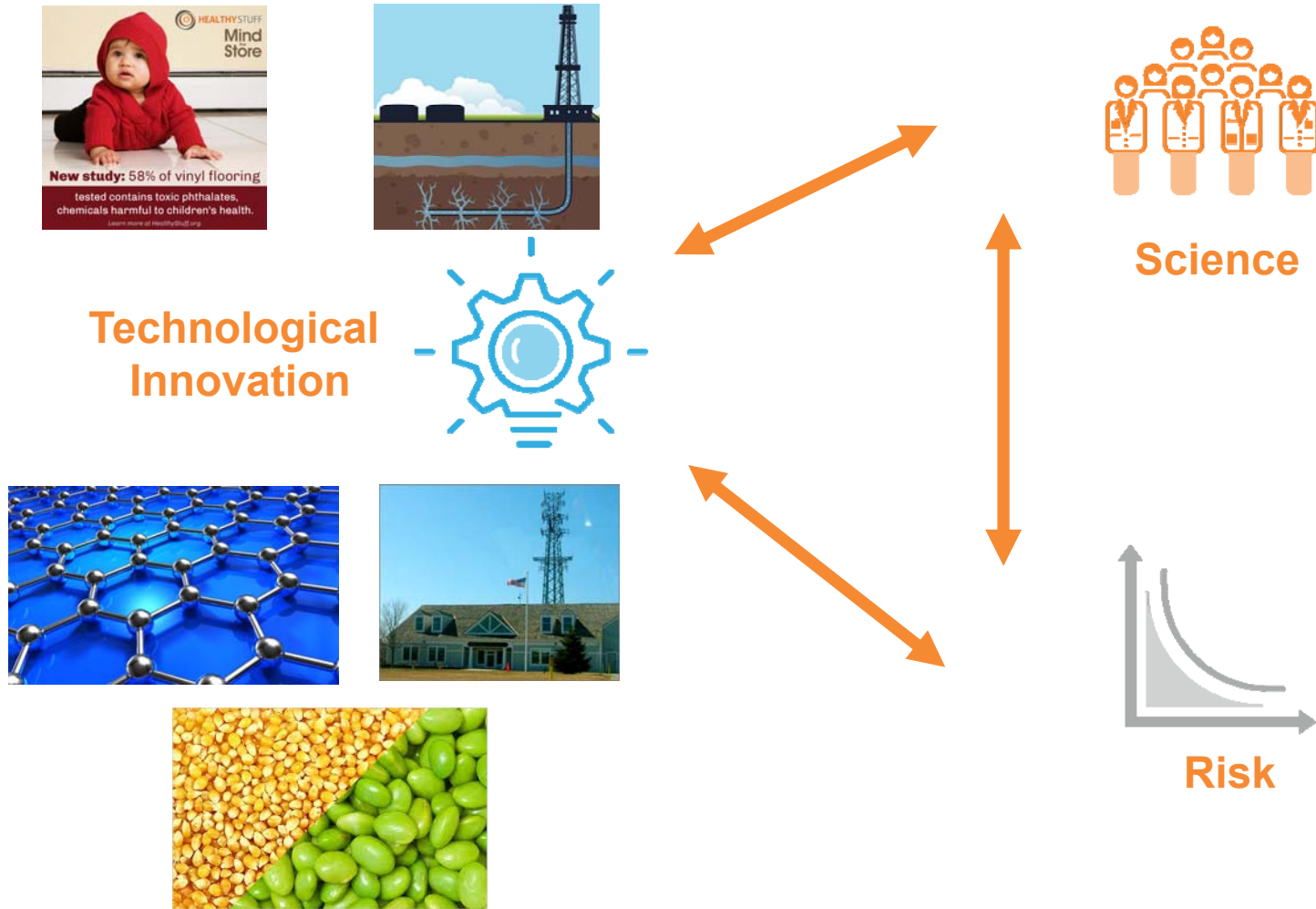
Science



Risk

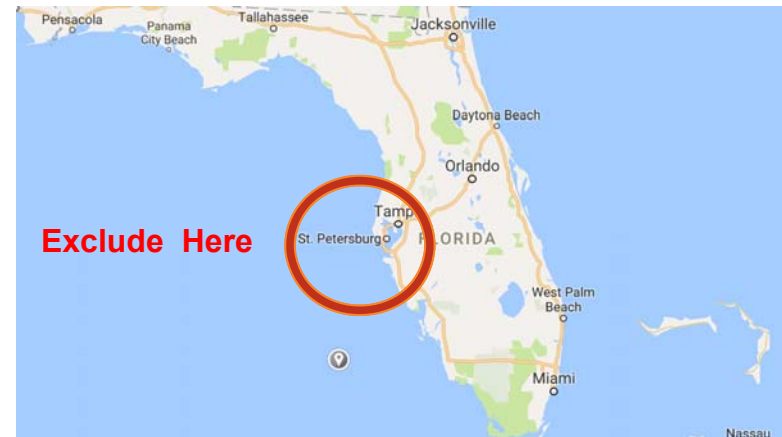
\$200B

# “Disruptive” technologies are emerging with increasing frequency



# For insurers, exclusions have been the answer

**Liability insurance:  
All perils with exclusions**



## The Emerging Risk Group

- ✓ 40 standard chemical exclusions
- ✓ 60 standard pharma company exclusions
- ✓ Pollution
- ✓ Etc. etc.

**Cat modeling experience suggests a better solution**

# What are the key characteristics of the risk for purposes of cat modeling?

- Each event is unique
  - Requires forward-looking model
- Two tails of risk
- Science helps a lot
  - Risk identification
  - Probabilistic early warning



“The Nekomata”



# We transform the text of science into a synthetic probabilistic claims database



Hypothesis:  
Exposure in the  
NICU causes  
autism

## Our Data

- ✓ Plaintiffs
- ✓ Compensable harm
- ✓ Defendant industries
- ✓ State of the science



[ASN Neuro](#), 2012; 4(4): e00089.

Published online 2012 May 30. Prepublished online 2012 Apr 27. doi: [10.1042/AN20120015](https://doi.org/10.1042/AN20120015)

PMCID: PMC3363982

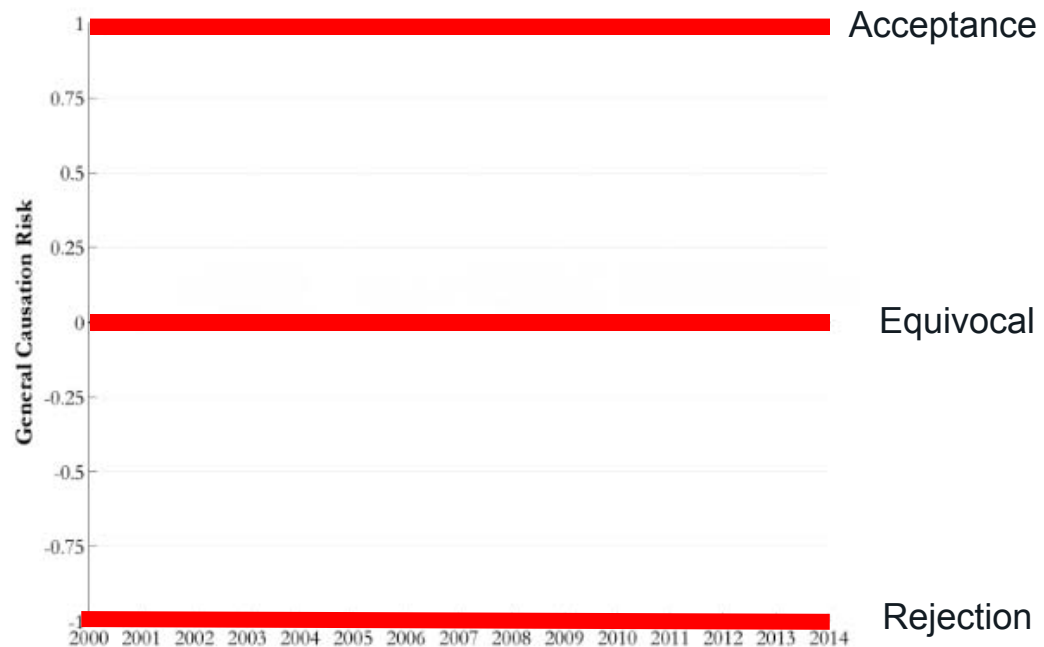
## Di-(2-ethylhexyl) phthalate and autism spectrum disorders

[Chiara Testa](#),<sup>††</sup> [Francesca Nuti](#),<sup>††</sup> [Joussef Hayek](#),<sup>§</sup> [Claudio De Felice](#),<sup>¶</sup> [Mario Chelli](#),<sup>†</sup> [Paolo Rovero](#),<sup>†</sup> [Giuseppe Latini](#),<sup>\*\*††</sup> and [Anna Maria Papini](#)<sup>†††</sup>

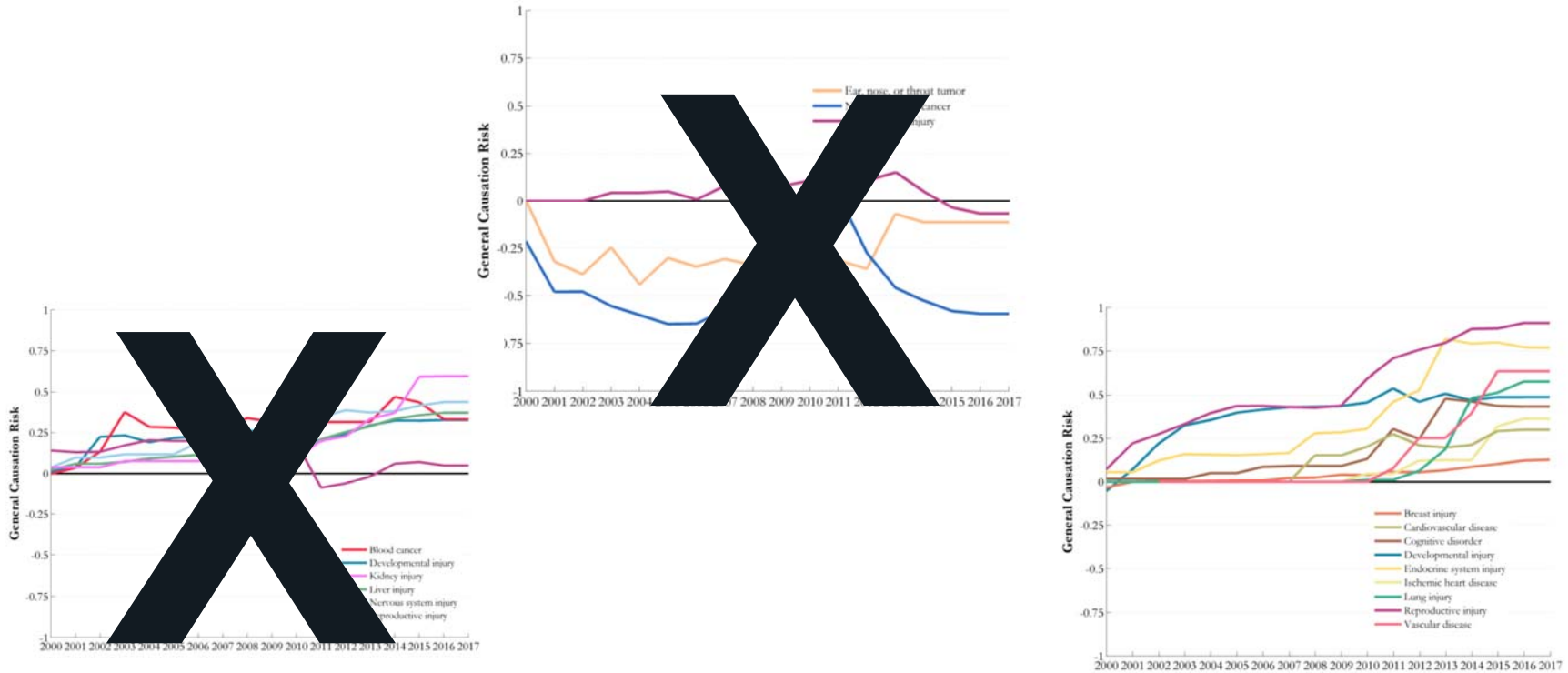
Over 50,000 simulated  
mass liabilities

# Modeling turns data into risk insights

Praedicat has built a model of scientific acceptance using literature metadata

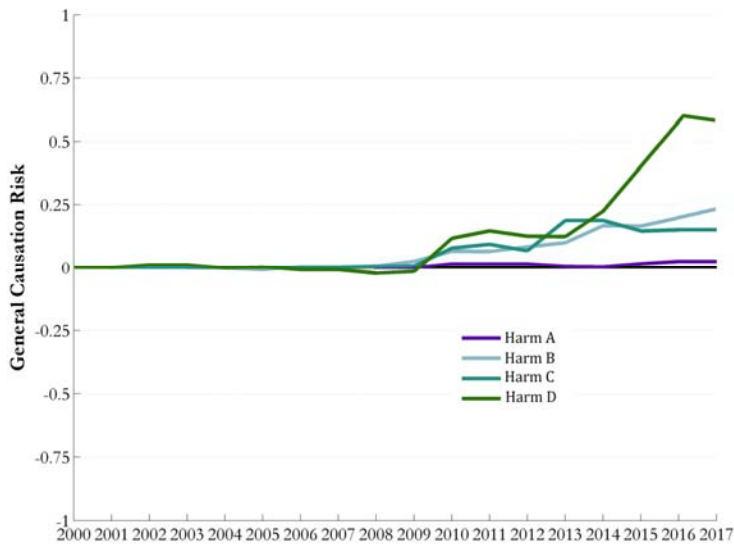


# Three risks – exclusions?



A science-based approach encourages consistency and broader coverage

# Science-based approach encourages better product stewardship

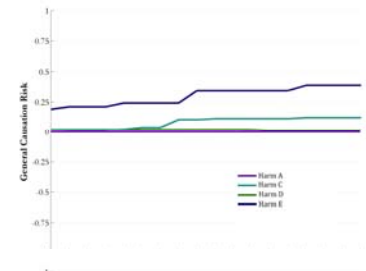
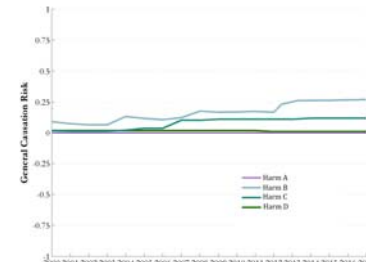


Product X faces regulatory withdrawal

1

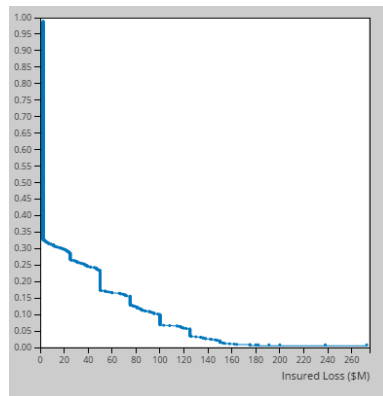
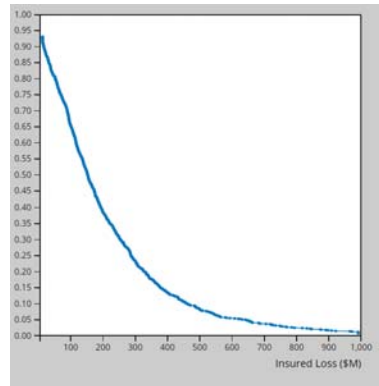
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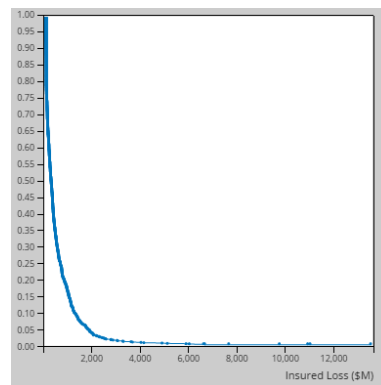


# We have also extended the science-based approach to casualty cat modeling

Paint company liability catastrophe EP curve



Bermuda insurer liability catastrophe EP curve

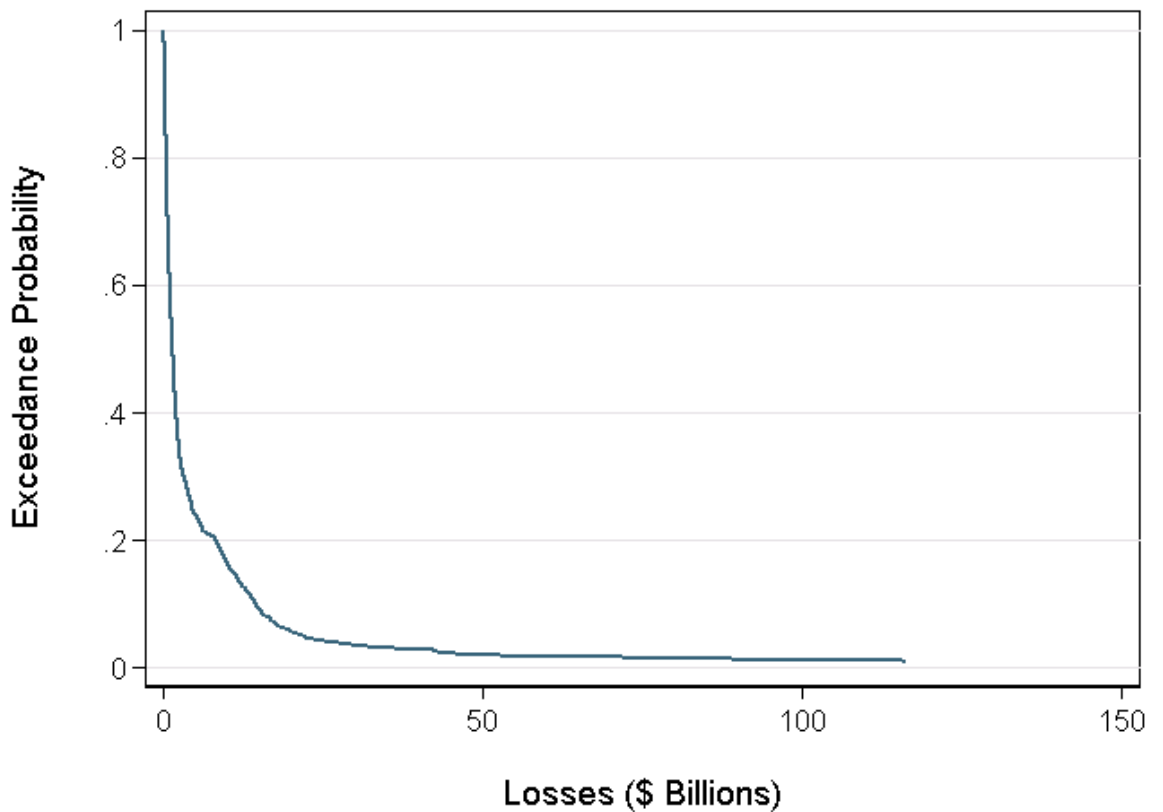


Adhesives industry liability catastrophe EP curve

- A microsimulation of mass litigation called the Nekomodel™
- Exposure-based forward-looking liability catastrophe modeling
- Probabilistic modeling of simultaneous exposure to dozens of agents
- Insurance model for trigger, attachment, limit
- Estimate company, industry and portfolio exceedance probabilities
- Facilitates aggregation management and new named peril products

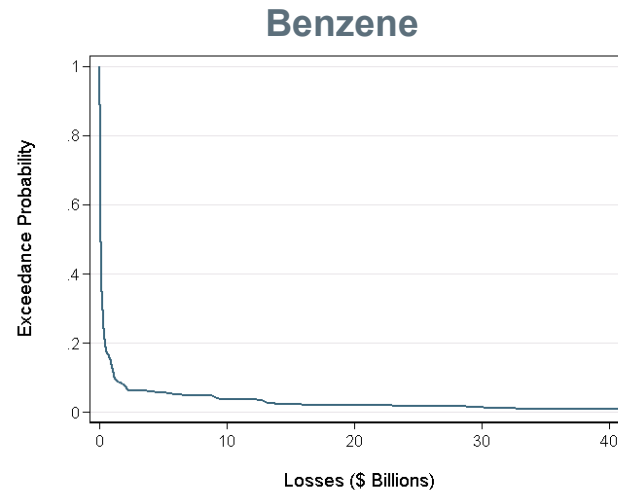
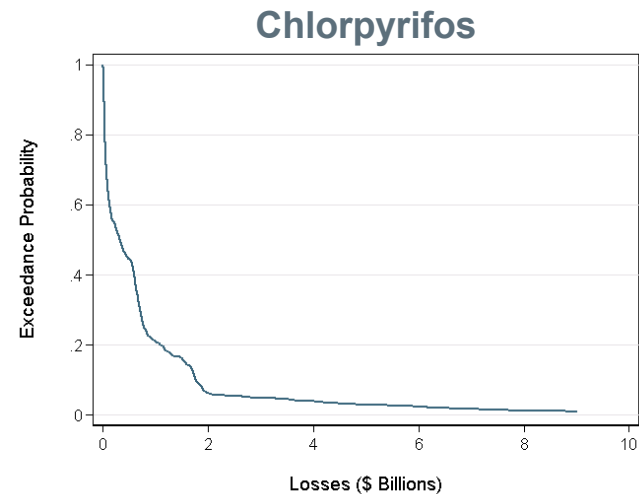
# DEHP shows the highest potential losses of any agent

Complex clash of chemicals, plastics, toys, building products, food production and medical devices



# Thirty-six Litagion<sup>®</sup> agents with significant risk

- Contemporary issues
  - Endocrine disruption
  - Childhood and in-utero exposures
  - Food-related risks
- Also some longstanding concerns
  - Benzene, TCE
- Equally important is what didn't project litigation risk:
  - Carbon nanotubes
  - Power lines



# The Nekomodel™ will drive insurance from “emerging risk” to modeled “named perils”

*There are known knowns; there are things we know that we know.*

*There are known unknowns; that is to say, there are things that we now know we don't know.*

*But there are also unknown unknowns – there are things we do not know we don't know.*

-Donald Rumsfeld



**There is also liability insurance: that is to say “unknown unknown” insurance with exclusions of “known knowns”**



# Toward a Named Peril Future

## The Future:

- Tailored liability (re)insurance with coverage of named perils (“known unknowns”)
- Risk engineering at scale drives better product stewardship
- Cleaner, safer, healthier businesses



*The Golden Age of Cat-Modeled Casualty*

Praedicat®