



Insurance Programs
and Analytic Services

Casualty Catastrophe Risk: Qualitative and Quantitative Evaluation

CAGNY Meeting – December 5, 2014

Emerging Issues

“When preparing for a crisis, it is instructive to recall that Noah started building the ark before it began to rain.”

*Norman Augustine, retired chairman and
CEO of Lockheed Martin*

Emerging Issues

- What is an emerging issue:
 - New phenomenon: nature and effects are relatively unknown
 - E.g., nanotechnology
 - New risk: nature and effects are relatively known but involve unique characteristics
 - E.g., hydraulic fracturing
- Potential Impact:
 - May go beyond existing underwriting and risk management best practices
 - May go beyond existing actuarial calculations

Emerging Risk Management

- **Insurers**: Greater focus on emerging issues, as part of Enterprise Risk Management (ERM) strategy
- **Regulators**: Increase in risk-focused evaluations
- **Rating agencies**: Standard and Poor's rating evaluation
 - An Insurer's ERM Score is determined by analyzing five subfactors:
 - Risk management culture
 - Risk controls
 - **Emerging risk management**
 - Risk models
 - Strategic risk management

Emerging Risk Management

- Distinctly classify risks containing new exposures
- Evaluate whether existing coverages and pricing sufficiently address those exposures
- Emerging issues are not just risks – they're opportunities
- Make emerging issues strategy part of corporate culture

Emerging Issues

- Planning for and assessing emerging issues
 - Information from many sources
 - Staff
 - Litigation
 - Scientific studies
 - Futurists
 - Customers
 - Technical journals
 - Look at issues from various perspectives
 - Underwriting
 - Claims
 - Loss control
 - Risk management
 - New coverages
 - New classifications
 - Pricing implications

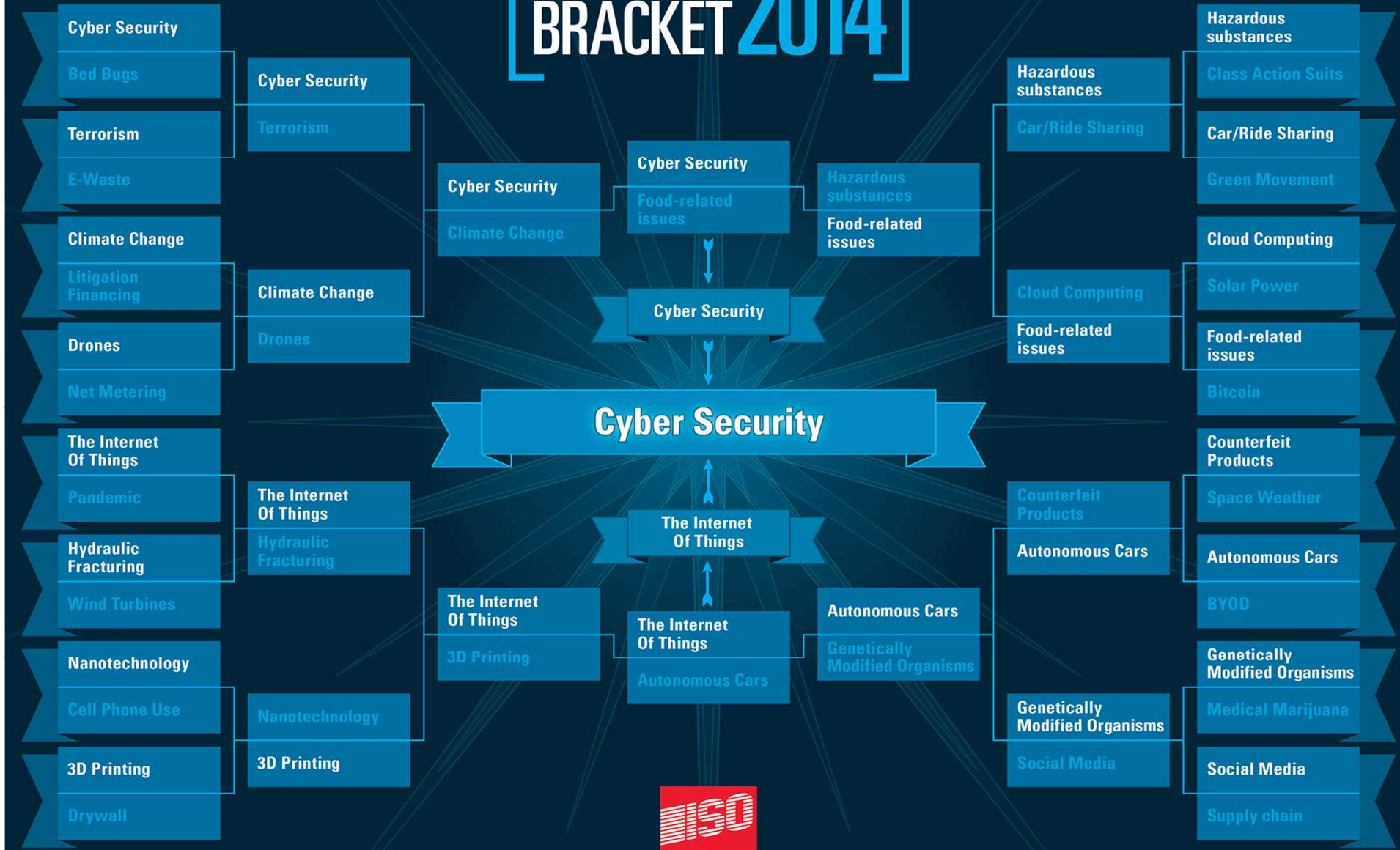
Emerging Issues Portal on ISO Net

- Provides timely information on emerging issues, including a “Today’s Hot News” link
- Designed to lead to a more robust resource of information for each emerging issue
- Provides links to articles and publications related to various emerging issues
- <https://www5.iso.com/erm/app/EmergingHomePage.action>

Wide Range of Risks

- Alternative energy
 - solar, wind, geothermal
- Artificial intelligence
- BYOD
- Climate change
- Cyber security
- Counterfeit/hazardous products
- Demographic Shift
- Driver/vehicle issues
 - autonomous vehicles
- Drones
- Food-related issues
- Genetically Modified Organisms
- Green Movement
- Hydraulic fracturing
- Litigation financing
- Medical/recreational marijuana
- Nanotechnology
- Pandemic
- Social media liability
- Space weather
- Supply chain vulnerability
- TRIA: scheduled termination
- 3D Printing
- Water quality/scarcity

EMERGING ISSUES BRACKET 2014



Defining “Casualty Catastrophe”

- No Generally Accepted Definition
- Large Economic Cost
- Could Impact One or Multiple Industries
- Could be Related to Type of Event or Product
- Strong Effort to Reduce Future Exposure after Identification

Historical Casualty Catastrophes

- Asbestos
- Pollution
- Pharmaceutical

Common Traits of Casualty Catastrophes

- Advances in Technology/Changes in Methods
- Widespread Use
- Latency
- Scientific Research
- Law Changes
- Judicial Decisions

Cyber Risk



Cyber Risk

- World of Interconnected Devices and Systems
- Advances in Ways to Electronically Access Information (Smartphones, Tablets, Wireless Data, Online Access to Networks, Cloud Storage, Social Media)
- New Capabilities, New Risks
- Evolving Security Risks
 - New Methods/Exploits
 - Risk Management Important
 - Difficult to Track Those Responsible

Causes of Incidents

- Hacking
 - Economic
 - Activism
 - “The Challenge”
- Accidents
 - Programming Errors is an example

Cyber Incidents and Insurance

- Additional Risks Related to Cyber
- “Cyber Liability” Policies
 - Generally Provides Certain First and Third Party Coverages
 - Coverage Offerings Differ by Company
 - Provides Coverage for Certain Cyber Incidents
- Potential Coverage Under Other Policies
- Examples of Potential Cyber Incidents
 - Theft or Destruction of Information
 - Extortion
 - Libel and Slander
 - Resulting Injury or Physical Damage to Persons/Property

ISO Cyber Liability Program

- Insurance programs designed to cover Internet liability and network perils — from viruses to cyber extortion to liability arising from security breaches — for companies and not-for-profit organizations with a web presence
 - Information Security Protection Policy (for all commercial and government entities)
 - Financial Institutions Information Security Protection Policy (for all financial institutions)
 - Media And Information Security Protection Policy



ISO Cyber Liability Program

- Eight insuring agreements:
 - Web Site Publishing Liability
 - Security Breach Liability
 - Programming Errors and Omissions Liability
 - Replacement or Restoration of Electronic Data
 - Extortion Threats
 - Business Income and Extra Expense
 - Public Relations Expense
 - Security Breach Expense



Nanotechnology



Background

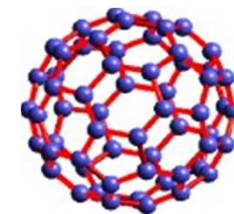
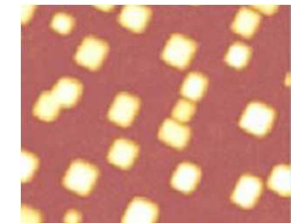
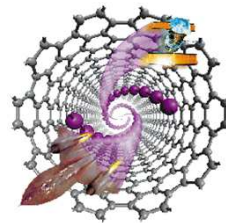
- Applied science/technology using matter that is very small
- Can be measured at the nanometer level
- Nanometer = 1 billionth of a meter
- Manipulation of matter so it takes on unique properties that enable novel applications

It's a Small World

- 10,000 times smaller than anything the human eye can see
- A human hair = 50,000 to 100,000 nanometers in diameter
- Red blood corpuscle = 7,000 nanometers
- A virus = 20 to 300 nanometers
- Over one million particles 1 nm in size would fit into the dot of this "i"

It's A New Language

- Buckyballs
- Quantum dots
- Fullerenes
- Carbon nanotubes
- Nanospheres
- Nanocrystals



Where Used

- Skin creams and cosmetics
- Sun block and suntan lotion
- Appliances
- Plastic wrap and food packaging
- Automobiles, aircraft, bicycles
- Clothing and other fabrics
- Computer chips
- Electronics
- Sports equipment
- Laundry detergent and fabric softeners

What's the Potential Problem?

- Limited information about potential/unexpected hazards
- No confirmed cases of harm to humans
- Future application of nanotechnology

Potential Human Exposure

- Penetrate skin
- Enter the digestive tract/intestinal tissue
- Respiratory

Potential Workplace Hazards

- Millions of workers exposed daily
- Safety precautions
- Potential toxic effects and occupational health risks are unknown
- Assessment is in early stages
- Inhalation of ultra-fine particles is a concern

Potential Insurance Concerns

- Products Liability:
 - Design errors
 - Faulty manufacture
 - Product defects
- Commercial Auto
 - Transportation of nanotechnology products
- Workers' Compensation
 - Exposure of employees

ISO Nanotechnology Classifications

- Effective in most states in 2011, ISO introduced the following GL classifications:
 - Nanotechnology Manufacturers
 - Does not apply to risks using nanomaterials in the manufacturing of their products or for their research purposes
 - Nanotechnology Distributors
 - Does not include sale of products that contain nanomaterials

Additional Potential Casualty Catastrophes



Potential Casualty Catastrophes

- **Food-related issues, GMO's**
 - Litigation alleging food manufacturers provide distorted information; labeling
 - Unknown effect on human health and other organisms
 - Unintended Transfer
 - **Exposures:** farm, manufacturer, distributor, wholesaler, grocer
- **Hydraulic fracturing (fracking):**
 - Water, sand, chemicals are injected at high pressure into shale rock to release natural gas
 - **Exposures:** environmental, truckers, seismicity, silica, health, livestock, landowners

Potential Casualty Catastrophes

- **Additive Manufacturing (3-D Printing)**
 - **What is it?**
 - Production technology that creates components/parts/products from a digital image blueprint
 - Products created layer by layer using materials such as polymers/metals/ceramics
 - Designs sent anywhere as digital files to be “printed”
 - **Exposures:** intellectual property; responsibility for design problems; 3D home printers; security

Contact Details

Tim McCarthy, ACAS, MAAA

Manager & Assistant Actuary

ISO – Commercial Multi-Line Actuarial – General Liability and MPL

tmccarthy@iso.com

201-469-2743

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