

Environmental Risk Assessment

CES VCU

ENVS 601

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Risk Assessment in the Federal Government

According to NRC (1983), risk assessment predicts the impacts to health from exposure to an environmental agent or condition

Ecological Risk Assessment

EPA (1992) defined ecological risk assessment as “a process that evaluates the likelihood that adverse ecological effects may occur or are occurring as a result of exposure to one or more stressors.”

Suter agrees in principle

Application of risk assessment

- Law
- regulation
- policy
- health
- environment
- wildlife
- safety
- emergencies

Basic approach

- Source
- Exposure assessment
- Hazard assessment
- Dose-response function
- Risk characterization
- Discussion with manager
- Uncertainty analysis

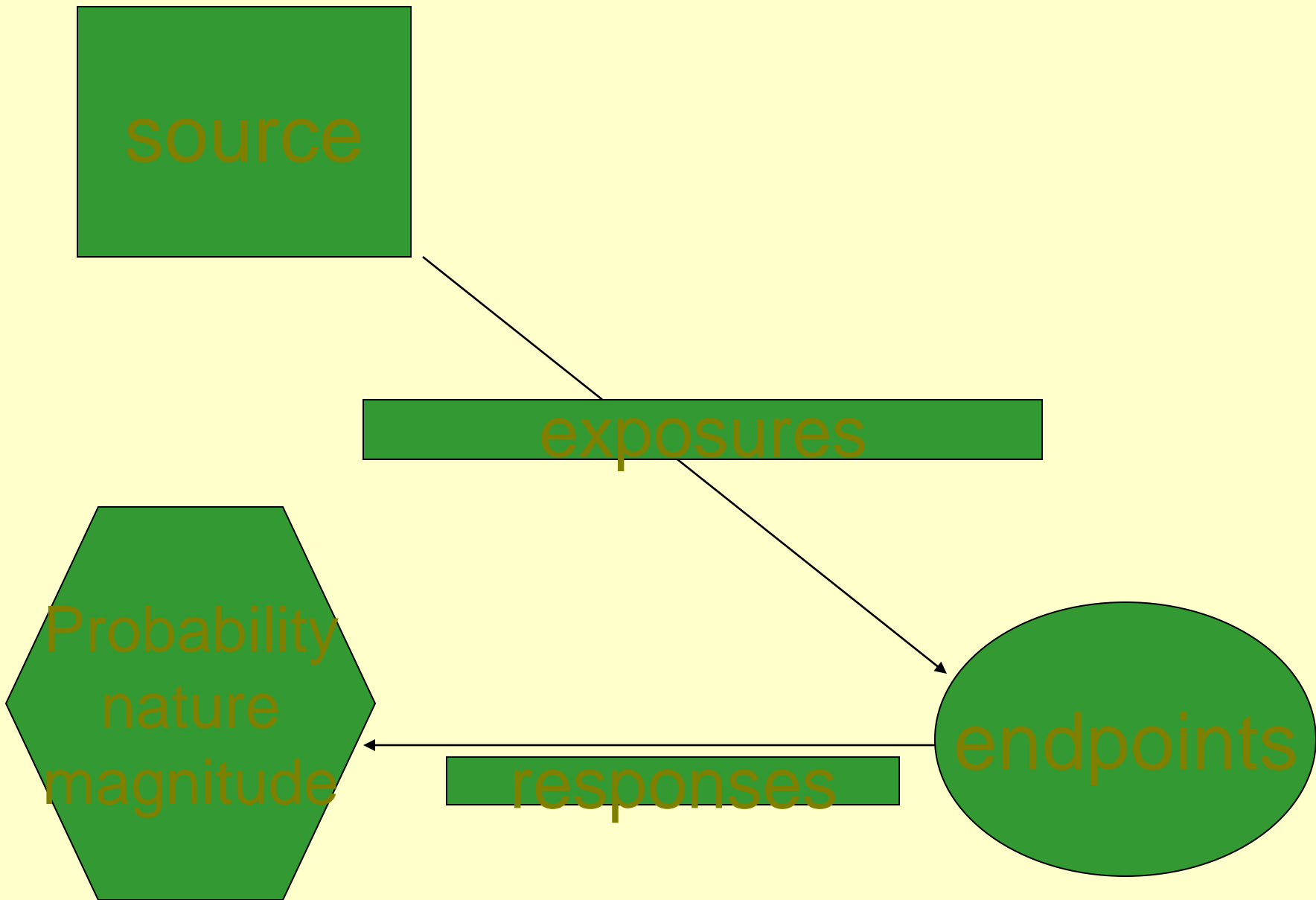
Federal Environmental Laws

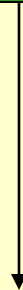
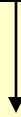
- National Environmental Policy Act
- Clean Water Act
- Clean Air Act
- Superfund - CERCLA
- Solid Waste Act - RCRA
- Endangered Species Act
- Safe Drinking Water Act

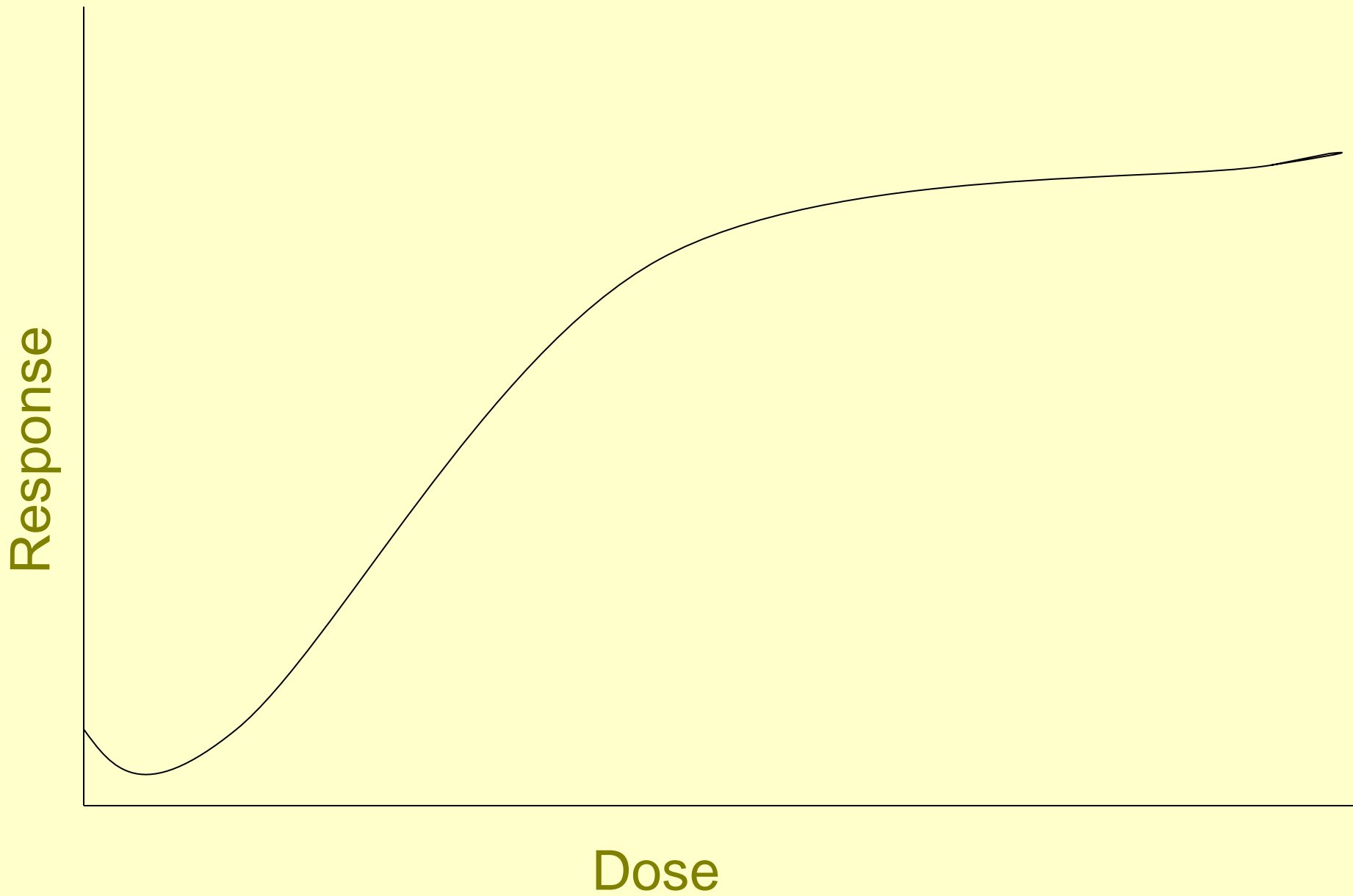
- Pesticide Act - FIFRA and FQPA
- Marine Mammal Act
- Marine Protection Research and Sanctuary Act
- Migratory Bird Act

Risk assessment derives from toxic chemicals

- Dose makes the poison
- Dose-response is required (linear or otherwise)
- Underlying biology needed
- no-exposure = no poison
- lab testing is the basis







Testing concepts

- animals as surrogates – concepts of extrapolation
- Dose selection
- Response identification
- LD vs LC
- LD 50 ideas and issues
- Sample sizes

- Duration of exposure and experiment
- ASTM
- Baselines and “normal”
- Points of comparison-
experimental v control, n, t, dose,
etc
- monophasic/monotonic curves?