

# *Forest Service Pesticide Risk Assessments*

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# Topics to Cover

- *What is a Pesticide Risk Assessment?*
- *How they are developed?*
- *Limitations*
- *How they can be used?*



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## **Glyphosate - Human Health and Ecological Risk Assessment Final Report**

Prepared for:

### **USDA, Forest Service**

#### **Forest Health Protection**

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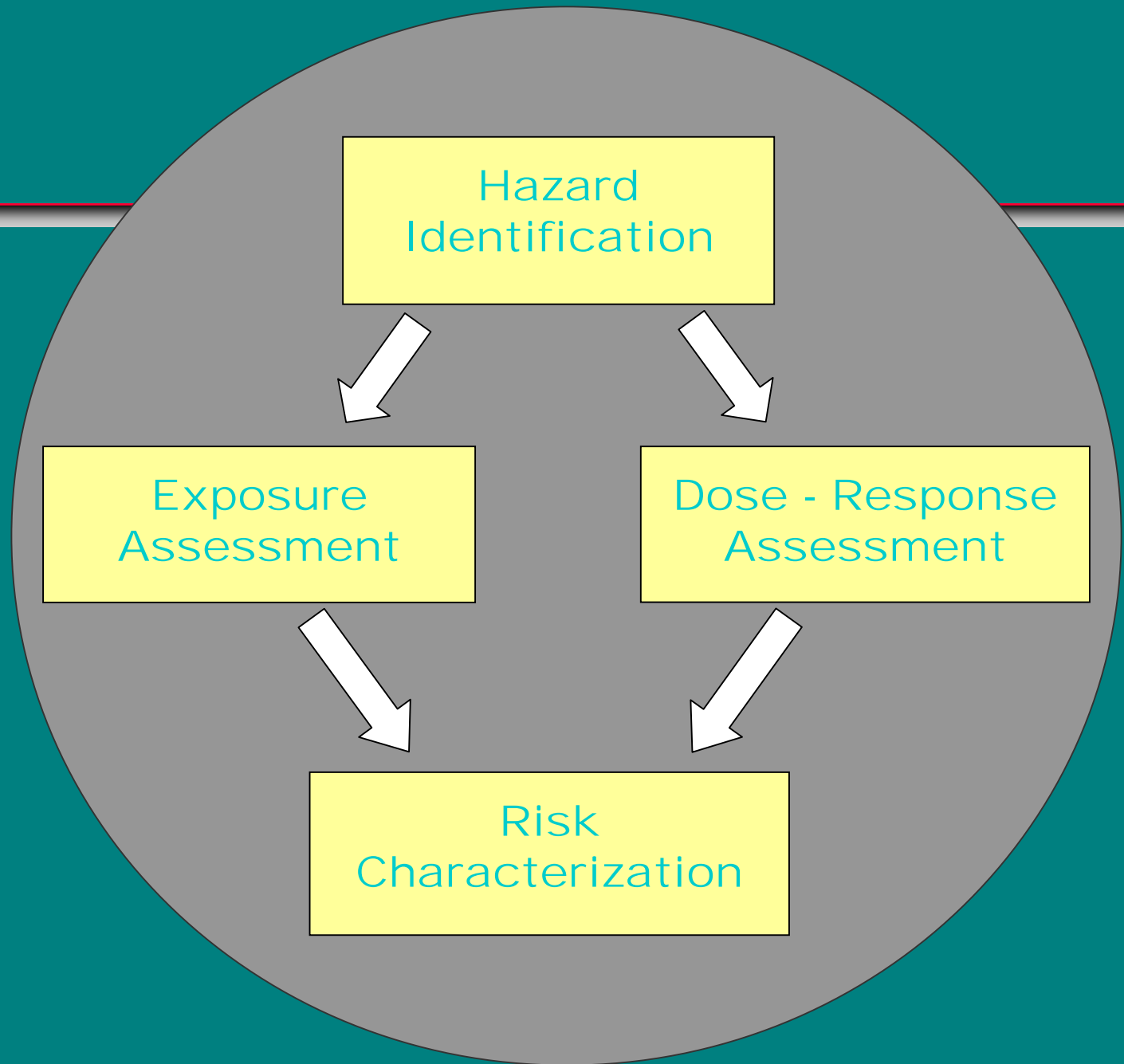
# *What Is It?*

- *An analysis and decision-making tool*
- *Involves a transparent and rational process*
- *Answers the question: Is there a plausible risk to mammals, birds, etc., from the proposed use of a pesticide*
- *Provides a basis for risk management and risk communication*

# *Components of Analyzing Risk*

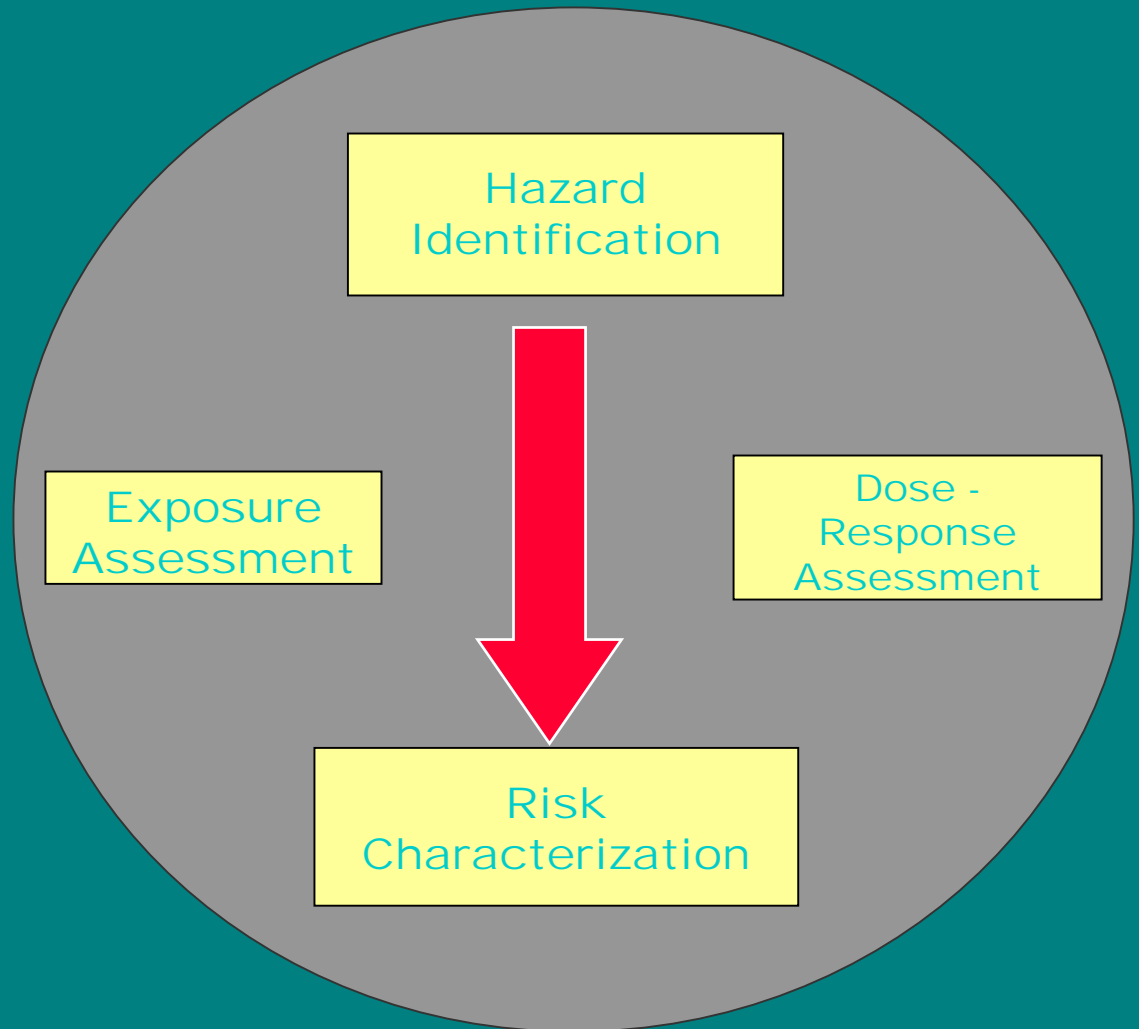
- *Hazard*
- *Exposure (Dose)*
- *Dose-Response Analysis*
- *Risk Characterization or Assessment*

*Which leads to Risk Management (not a part of the risk assessment)*



# *Junk Analysis – Commonly Seen*

*Something is hazardous, therefore it will cause harm.*

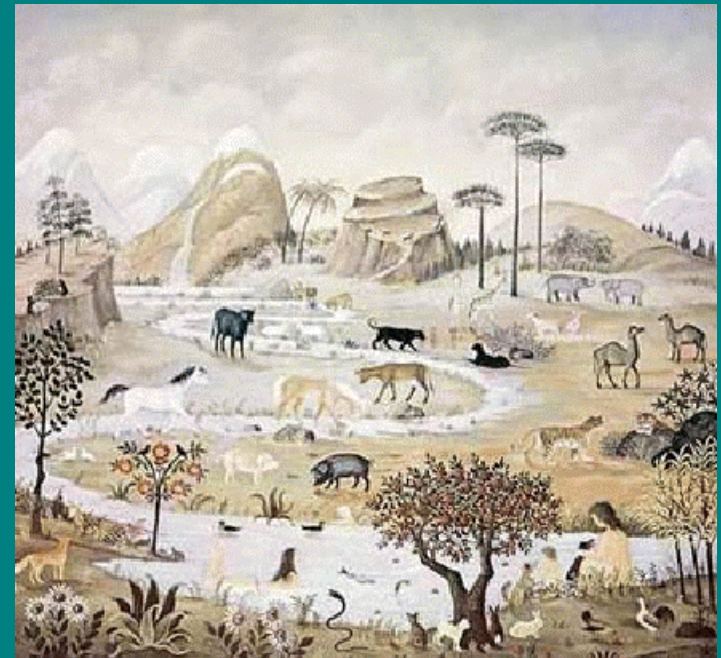


# *Hazard (Toxicity)*

- *What can the pesticide do?*
- *Data on relatively few species are used to protect the many (we hope)*

*Terrestrial - mammals, birds, invertebrates, plants, soil microorganisms*

*Aquatic - fish, invertebrates, plants, microorganisms, amphibians*



# *Hazard (Toxicity) - Sources*

- *Standard US EPA req'd toxicity tests*
  - *Mostly done by registrant*
  - *Limited range of species*
  - *Confidential Business Information (CBI)*
- *Peer-reviewed literature*
  - *Toxicity tests*
  - *Field studies*
  - *Efficacy tests*
- *Government studies/reports*



# *Exposure*

- *Who gets what and how much?*
- *Relatively few species are analyzed*
  - *No reliable exposure assessment*
  - *No species-specific dose-response data*
- *Forest Service developed typical exposure scenarios*
  - *Terrestrial and aquatic organisms*
  - *Direct, indirect contamination*
  - *Eating, drinking contaminated material*

# *Dose – Response Assessment*

- *How much is too much?*
- *Different effects caused by different doses*
- *Establishing the No Observable Effect Level (NOEL)*
- *Forest Service uses the lowest NOEL*

# *Risk Characterization*

- *Is there any reason to worry?*
- *Forest Service uses Hazard Quotient (HQ)*
  - *Ratio of exposure to toxicity*
  - *Toxicity based on No Observable Effect Level (NOEL) or Concentration (NOEC)*
  - *If  $HQ < 1$ , the risk is low*

# *Limitations*

- *Cannot prove safety*
- *Analysis is only as good as the data behind it*
  - *Inert ingredients*
  - *Mixtures*
  - *New data*
- *Surrogate species*
- *Listed or sensitive species*
  - *US EPA uses a 'safety factor'*
  - *Are sensitive species 'sensitive'?*

# *How to Use the Risk Assessment*

- *Shawna Bautista's presentation*
- *Excel-based worksheets can be easily customized for each project*
  - *Generate your own HQ numbers*
  - *Analyze alternative pesticides*
- *Risk Assessment leads to Risk Management*

# *Risk Management*

*So we have numbers that show an unacceptable risk, how do we resolve this?*

- *Switch to other chemicals or methods*
- *Label Restrictions*
- *Timing of applications*
- *Non-treatment buffers*

# Summary

- *Risk is a function of both hazard and exposure*
- *FS risk assessments are available for invasive weed applications of herbicides*
- *Evaluating risk will lead to informed risk management decisions*
- *Understanding data limitations is critical*

# *Forest Service National Risk Assessments*

- *[www.fs.fed.us/foresthealth/pesticide/risk.shtml](http://www.fs.fed.us/foresthealth/pesticide/risk.shtml)*
- *14 herbicides, 6 insecticides, 1 fungicide*
- *Microsoft Excel Worksheets*





# Questions?

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