Risk communication between dispersion modelers and decision makers

Steven Hanna

Harvard School of Public Health

hannaconsult@roadrunner.com

www.hannaconsult.net

3 March 2015

Model developers

- Universities
- National labs
- Private industry
- “Subject Matter Experts” – with advanced degrees in sciences, engineering, math, statistics, etc.
- Little formal training in communications or risk assessment

Decision-Makers

- Emergency responders
- Planners
- Mayor, governor, or other head of a government agency
- Stakeholders such as railroads, chemical plant owners
- Unlikely to have scientific training

Fitness-for-purpose

- This is a term that is now widely used
- Is the model “fit” for the specific scenario and decision process
- Models are generally “fit” primarily for the scenarios with field experiment data used in their evaluations
- Thus a dense gas release in a city on a steep hill is a tough modeling problem (no field data)

Situational Awareness

- Not all modelers and models are the same
- Not all decision makers are the same
- Not all modeling scenarios are the same
- Therefore all parties should communicate beforehand so that “everybody is happy” (or at least fully aware of the situation)

What model outputs are needed by decision-makers?

- Concentrations or deposition for specific averaging times?
- Dose (concentration integrated over time)?
- Contour plots overlain on map?
- Distance to a defined concentration limit
- Etc. (Should be well-defined before the modeling starts)
- This step needs communications between modelers and decision makers

What are the models able to do?

- Decision-makers may have unrealistic expectations – They may want A, B, and C, and the model can produce only D.E, and F.
- For example, non-modelers often think that the models can do more than is the case and are more accurate.
- Again, there is a need for communications between modelers and decision makers

Common Theme

- Most of the above slides include the words “communicate”
- Modelers and decision-makers should hold workshops and communicate, so they have “situational awareness” and model outputs can be provided that are “fit-for purpose”