Wisconsin AHMR Keynote Address NOTES

THANK the Wisconsin Association of Hazardous Materials Responders for the invitation to be with you all today. It has been rewarding to me personally to see the changes in this field over the past 40 years, in large measure due too efforts by people such as you, and by the growth of organizations such as yours.

1. COMMEND you individually for personally directing your time, energies and resources to this relatively obscure and largely thankless endeavor to the benefit of your communities.

I would like to talk this morning about several matters:

- 1. You are a very valuable resource to your communities
- 2. Your hazmat readiness and response challenges are really tough ones.

3. You need to be engaged in a continuous learning process

I hope to share with you how we got to where we are today, who helped us get here and where we need to go.

Let me start with some facts.

- I haven't ever been a fire fighter
- I haven't participated in HazMat emergency responses except a few very minor incidents chlorine cylinder leaks, liquid nitrogen truck leaks, that sort
- I haven't ever had any HazMat responder training.

So, what is this guy doing here?

Well, I've been involved with HazMats much of my life.

- I have been responsible for putting a lot of HazMat into commerce, like chlorine, liquefied gases, jumbo liquid hydrogen trucks and minute quantities of exotic specialty gases -
- I have investigated and analyzed over 20 major HazMat accidents and supervised investigations and analysis of around many others, to come up with descriptions and explanations of what happened
- I have been give the time and resources to thoroughly analyze mishaps and responses to them, define problems they reflected and their solutions in more detail than most others
- I was challenged to come up with something better than responses I criticized
- I worked with HazMat responders to develop better ways.
- I have seen gratifying results from those efforts.
- I have seen gratifying results from my efforts.

From my experiences, I have learned that

First, I think you are a valuable resource to your communities.

Let me expand on that point.

The "Public" is concerned about HazMat safety -

• You see it in the NIMBY's against HazMat sitting or transport in their neighborhoods - IL girl in Crescent City hearing

- Media reports fan uncertainty
- Specific concerns vary with familiarity of HazMat e.g., nuclear vs. natural gas and household lye, and
- generational recollections of losses atom bomb

Recently compounded by terrorist use of HazMat - WMDs

Unknown HazMat threat, assume worst - press inflates concerns

Concerns reflect Human trait to favor certainty, eschew uncertainty and unknowns – *called ambiguity* aversion by psychiatrists

Attributes of your community status include public's confidence, trust, respect, and under-appreciation for your role

- Confidence in your presence readiness and preparations for instances of peril, to allow people to go on with their normal lives
- Trust in your leadership and actions in time of peril and uncertainty
- Respect for your willingness to serve in face of uncertain dangers
- Under-Appreciation because risks are unknown, but when it happens gratitude that it's you not them on front lines

What might jeopardize that confidence?

- No incidents -> hasn't happened so it won't crying wolf problem
- Overestimating risks and nothing happens

That brings me to the challenges HazMat emergencies pose for you

2. Your HazMat response challenges are tough ones.

Your ROLE is basically **predicting bad HazMat emergency behaviors and changing them**. That involves many kinds of tasks.

Tough to prepare for rare HazMat incident response data gathering and decision making, esp in transportation because emergency can

- happen any time
- happen anywhere transport "vehicles" are found, hiway, rail, pipeline, air (drop from sky anywhere)
- involve any of the thousands of hazardous materials
- involve any quantity of HazMats
- require many different kinds of resources to handle

+ challenge compounded by Dynamic systems operations

e.g., in Fixed facility: know inputs, outputs; Transport: both unknown

Yogi Berra – It's hard to predict the future, because it hasn't happened yet.

Challenges **compounded further** by time pressures, weight of command, response Need disciplined process to cope with challenges –

Some observations about your " helpers" with this process.

-- off site helpers: They're not there, don't have full picture

-- Guides:

I think of guides as cookbooks with if-then recipes.

To cover all possibilities -- would be too large to create and learn.

SO the cook books available raise the level of abstraction- generalize - so they trade specifics for to cover more incidents

But, you can't apply recipe unless ingredients fit system dynamics facing you:

Recipe only part of challenge: need to know **how systems work**, how they will **behave**, and how to manage that behavior IN YOUR INCIDENT.

What are HazMat systems and how do they behave in emergencies

That's why GEBMO and TRACEM and DISPERSION MODELS and MENTAL MOVIES were created: to help you think systems and their behaviors. They are designed to help you THINK your way through the emergency, NOT JUST PICK A RECIPE.

Your challenge: understand HazMat systems, stationary or on the move, so you **predict** how the scenario will unfold in the minutes hours, days or even years ahead, **and act successfully** on that understanding.

I would offer one observation: did you ever notice none of the cook books tell you what results the recipes produced in the past? Just a thought.

OH. BY THE WAY, you have another challenge = increasing number of outsiders that know what you should be doing next on scene, OR who will second guess what you did.

<u>3 to meet these challenges, you need to be engaged in a continuous learning processes</u>

Lots to learn and retain to ensure your next response will turn out right, Changes keep happening, in HazMat systems and operations, some good, some not so good There'll be

- shifting away from some HazMats in process due to Green movements, cradle to cradle emphasis good
- new Managers, supervisors, trainers, responders, resource providersall tinkering with what is, --not so good
- new HazMats changing risks to you and your communities

- Blood-borne pathogens,
- HV Batteries on cars
- Nano tech influences on containers

AND there are Obstacles to learning you need to recognize

- "Worldviews" of your mission you don't need support
- desire to know cause, failure, error social baggage-
- Hidden assumptions about your role and tasks (later)
- Poor Data density of info available to you
- Metrics for you to argue for better tools or practices?

SO changes will require

- Controlled skepticism, challenging perceptions, assumptions, conclusions, reactions and thinking about alternatives and tradeoffs
- Collaborative data gathering about what might affect your tasks
- Collaborative learning, engaging in genuinely open dialogue,

Keep probing – pushing back the frontiers of knowledge:

• What you need to do for better outcomes, & survive for the next one

Some Good news: HazMat responses have changed a lot over the years You can benefit from past work

I'd like to review some of the milestones and changes with you, to give you a sense of how we got where we are, so you can get a feel for what's still needed When were finished, I'll take questions you might want to ask me.

Go through slides and remarks now

(~25 min)

(pick up from last slide)

I hope my experiences will encourage you to keep working on remaining challenges

Some Suggestions for you, and then questions.

• Change your vocabulary, stop using words like cause, cause factor, failed to, fault, did not, failure, etc Use inputs, outputs did this or that, then....find out "whys"

• Improve lessons learning system... predictive and reactive – Insist on inputs from Safety and risk analyses,

Who will provide future contributions to progress?

Turn over to Doug for Q & A.