

Risk Communication for the Non-Chemist (and Chemist)

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Risk Communication

- Basic strategies
- Communicating with non-chemists
- Communicating with chemists
- Communicating with first responders



Basic Tenants of Crisis Communication

1. **Be First:** Communicating information quickly is almost always important. The first source of information often becomes the preferred source.
2. **Be Right:** Accuracy = credibility. What is known, what is not known, what is being done to fill the gaps.
3. **Be Credible:** Honesty and truthfulness should not be compromised.
4. **Express Empathy:** Address what people are feeling and the challenges they face; builds trust and rapport.
5. **Promote Action:** Giving people meaningful things to do calms anxiety, helps restore order, and promotes sense of control.
6. **Show Respect:** People may feel vulnerable. Respectful communication promotes cooperation and rapport.

How People Process Information During Crisis

- We simplify messages
 - Don't always hear the whole message
 - Don't usually remember everything
 - Don't easily process information
- We hold onto current beliefs
 - Exploit conflicting or unclear messages based on our beliefs
- We look for additional information and opinions
 - Look for inconsistencies, the message we want to hear
- We believe the first thing we heard

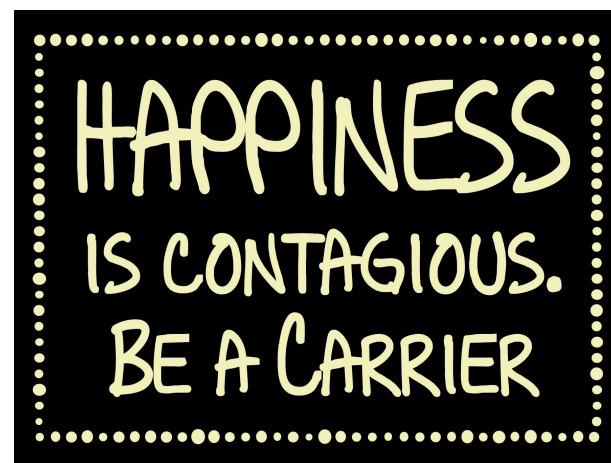
*Empathy is the door that opens your voice to the information that you want to communicate. **So if people can perceive that you actually care about them in a genuine, human way, I think they're much more willing to listen to anything else that you have to say.** If you don't do that, you have really lost your audience because people won't listen to you.*

— Julie Gerberding, M.D., Director, CDC SARS, 2003



Risk Communication Strategy

- Anticipate questions
- Outline ideas/facts that you want people to understand
- Answer question
- End answers on one of the ideas/facts
- Remember that...
 - Chemophobia is contagious
 - People react differently in crisis
 - Science is under fire – facts don't always matter



Not First?

- What were people told?
- Who told them? What is their level of credibility?
- What are people thinking?
- What does Google say?
- Much more difficult!



Pregnant or Planning Pregnancy

- Limited information
- Good lab safety practice = unlikely exposure
- Stress!!



RISK = HAZARD x EXPOSURE

OUTRAGE trumps RISK

- Voluntary vs involuntary
- Personally controlled vs controlled by others
- Familiar vs exotic
- Natural origin vs synthetic
- Reversible vs permanent
- Perceived benefit vs questionable benefit
- Statistical vs anecdotal



Communicating with Non-Chemists

- Relate to household products or things they care about, if possible
 - Acids in toilet cleaners, colas
 - Bases in dishwasher detergent
 - Glycols in antifreeze
 - Acetic acid
- Shoe polish
 - Naptha
 - Diethylaminoazobenzene
 - Stoddard solvent
 - 1,2,4-Trimethyl Benzene



Communicating with Non-Chemists

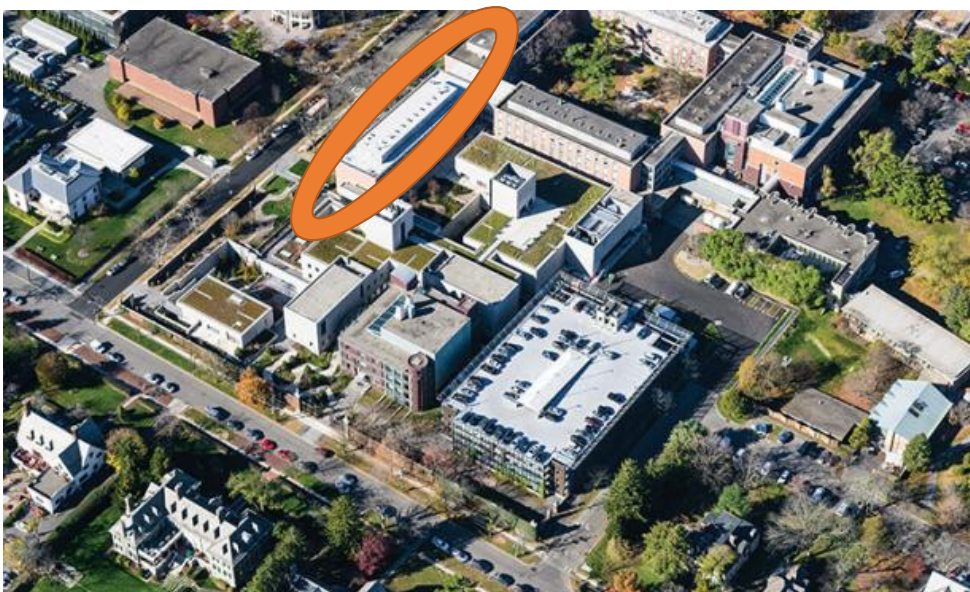
- Review SDS and Google documents
- Educate on routes of exposure
- Put into perspective
 - Understand the function of the chemical
 - Explain the relative risk of the concentration and amount
- Be concise, limit details
- Use common language – no acronyms, no jargon, 6th grade reading level
- Say “we” and “I” – personal pronouns



Communicating with Non-Chemists

- If there are exposure limits, explain them.
- Odor threshold information may be helpful
- A bad odor can result in health effects
- Testing: do it, if possible, if you can explain the results
- Statistics are not always reassuring
 - Radon exposure of 1.08×10^5 picocuries per liter-hours
 - 4.2 deaths per 10,000 or 1 in 2,381
 - Heart disease and cancer = 1 in 7
 - Motor vehicle accident = 1 in 113
 - Accidental drowning = 1 in 1,183

Roofing Project Gone Wrong



- Common roofing system
- Delayed recognition
- Several illness complaints
- One hospitalization
- Some sent home sick
- All communication from the building managers and school
- EHS Involved
 - Town Meeting
 - Cool heads

Example: Initial Communications

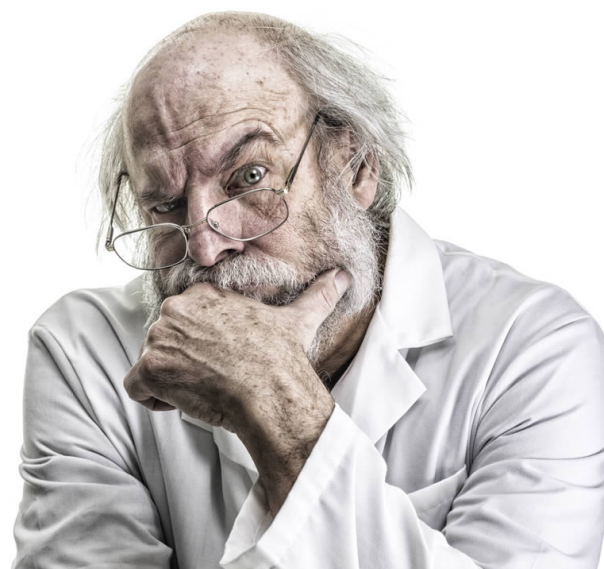
- The main ingredients of the adhesives are asphalt and mineral spirits. Since the roofing method does not involve heating or grinding the asphalt, it is unlikely that it would produce vapors or odors. Mineral spirits, including the stoddard solvent specified in the material safety data sheet for the product, are found in numerous products and their health effects are well documented.
- The Occupational Safety and Health Administration (OSHA) has a permissible exposure limit of 500 parts per million (ppm) for stoddard solvent. This is the air concentration that the average person may be exposed to 8 hours a day, five days a week for a lifetime of work without expectation of serious health effects. The American Conference of Governmental Industrial Hygienists, an independent organization, has a recommended exposure limit of 100 ppm.
- EHS conducted monitoring over a few days in several areas of E-Quad where odors were strongest. The highest measurement for stoddard solvent was 2 ppm.
- Despite the fact the concentration of mineral spirits was well below OSHA standards, odors persist. It is well understood that exposure to noxious odors may cause headaches, nausea and dizziness.

Example: Product Replacement

- The product name is Burmastic Adhesive SF. While the total volatiles (portion of the materials expected to create vapors) for the previous product was 33%, the total volatiles for the SF product is less than 1%, according to the manufacturer. This suggests that the new product will produce far less vapors than the mineral spirits product.
- The main components of the Burmastic SF are:
 - Polyurethane polymer - the specific chemicals are not listed, since the company has registered this as a trade secret. Most polyurethane polymers are solid materials and are considered chemically safe and actual exposure is unlikely.
 - Asphalt – like the previous product, since the application does not include heating or grinding the asphalt, it is not expected to pose an exposure risk.
 - Butyl benzyl phthalate – this plasticizer is not likely to be in vapors. Phthalates have gained notoriety for their potential to leach into food and drink containers when used as a plasticizer for soft plastics for cups, bottles, etc. This type of exposure is unlikely related to its use in this adhesive.
 - Heavy aromatic naptha – this material is not known to be hazardous, but is the source of the petroleum odor associated with this product.
- Methylene bis (phenylisocyanate) – isocyanates are generally used to produce polyurethane polymer. It is common for some of the isocyanate to be leftover from the polyurethane-forming reaction. It is a solid and not likely to be present in fumes or vapors from this product.
- According to the MSDS, inhalation of vapors from this product may cause slight irritation to the respiratory system, nausea, headaches, dizziness, drowsiness, weakness and fatigue. It also lists allergic respiratory sensitization, most likely because isocyanates are sensitizers – people may develop an allergy-like response. Since the isocyanate is in a solid form, it is unlikely to be present in vapors – it would be more of a risk for someone directly handling the material.
- Please contact XYZ if you would like a copy of the MSDS or if you have any questions about the material.

Communicating with Chemists

- Same as above
- Expect to be challenged
- Don't oversell your chemistry skills



The First Responder View

At Your Service



Mercer County Fire Academy
Princeton University Class of 2013

The Impetus

- College Road Apartments
 - Tudor Style – 1922
 - 14 Units, Single Structure
- Two Story Construction
- Single Room Fire on Level 2
- 34 Residents Evacuated
- No Injuries
- Not enough responders from the town's volunteer fire department



The Origins of a Unique Program

- University Outreach
 - How can we help?
- Pilot Program 2009
 - 24 Employees
 - FF1 Certified
- Firefighter 1 classes offered to University staff in 2011 and 2013
- Town provides vehicle
- University volunteers respond throughout town during University business hours



The Program is Strong

- FY2017 270 Calls
- Annual Training: 592 hrs.
- Nearly 1,405 hrs. Volunteered
- 20 Members also belong to a local
- New FF1 Class – Fall 2017



Benefits To All

• University

- Faster Response
- Campus Familiarity
- One duty Day per Week
- “Work Comes First...”

• Town of Princeton

- Bolstered Coverage
- Increased Membership
- Reduction in Cost
- Municipal Volunteers

Safety

- Credibility of EHS to first responders
- Better likelihood of proportional response





25 yrs.
Hazmat

IT/Database

Facilities
Supervisor

Carpenter

Arborist

Painter

M.S. Chemistry

Janitor

Security/Alarm

M.S. Chemistry

Facilities Tech.

We Mean Well – What you can expect...

- Working with limited resources
 - DOT ERG
- Communication researchers/reporting party → police dispatcher → fire dept.
 - E.g., venting cylinder of hydrogen was really cryogenic liquid (helium)



Tips for a Better Outcome

- Community outreach
 - Invite your local first responders to your campus
 - Do it often
- Trenton hazmat visit
- Size and Scope
- Relate chemicals to common things, household products



Benefits EHS Firefighters

- Brings perspective for EHS volunteers
- Trust - On and Off Duty
- In training – they can be teachers
- Look to us as a resource for certain calls
 - Smells
 - Spills
 - Unknowns





**Princeton Fire Department
University Volunteers
2016**



Thank you!!

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