

THINK



Published by the Delaware Department of Natural Resources and Environmental Control
Tank Management Branch as a service to the regulated community

Summer 2005

Number 46

Communication of Risk versus Risk of Communication

By Emil Onuschak, Jr., PG

The Groundwork

Scientists and engineers seeking answers to environmental problems all too often become more and more focused on their narrow specialties as they strive with greater and greater effort toward “ultimate answers.” While pursuing this goal, it is all too easy to lose sight of the uses that may—or may not—be made of those “answers.” Whether in the public or private sectors, it is very easy, and perhaps even encouraged or even required, to relegate communication about application of new discoveries “to management.” This delegation may occur with some justification because environmental specialists may be unaware—or uncaring—of the policy-level or legal ramifications of their work.

Those relatively rare instances when environmental specialists are in the position of communicating directly with the public often yield unsatisfactory results at best, for many reasons.

Environmental specialists attempt to communicate in scientific terms, as they have been trained to do. This accounts for all the knowns and unknowns, whether or not identified, in accordance with accepted scientific procedures. But what of the lay public who are, after all, the ultimate client?

The Dilemma

It is ironic that now in the 21st century, when the well-being of so many people increasingly depends on the widespread dissemination, understanding and application of scientific knowledge, just the opposite seems to be happening.

Although computers in all their forms and the Internet have achieved widespread dissemination of information, “information overload” has reduced the time available for individuals to absorb, understand and thoughtfully apply newly-communicated information. In a perverse form of psychological self-defense, some people “shut down” and actively decline to expand their understanding of the world in which they live.

This mind-set can be carried to extremes. A 2001 poll by the California Academy of Sciences (http://www.calacademy.org/geninfo/newsroom/releases/2001/survey_results0401.html) revealed that:

- More than half of all American adults (53%) do not know that the Earth goes around the Sun once a year. [!!!]
- Nearly half (48%) do not have a sense of what percentage of the Earth’s surface is covered by water. [About 70%—see <http://ga.water.usgs.gov/edu/earthwherewater.html>]
- And 42% can’t answer correctly when asked if the earliest humans lived at the same time as dinosaurs. [No. Dinosaurs went extinct about 65 million years ago; earliest humans first appeared much later. See <http://web.ukonline.co.uk/a.buckley/dino.htm>]

And this survey included college graduates!

In a given environmental situation, people often equate their perception of en-

environmental risk with reality in black-and-white terms. Perception equals reality. While this greatly reduces the volume of scientific information that must be absorbed, understood and acted on, it is almost never useful.

Every environmental public meeting seems replete with persons who equate the environmental topic at hand, regardless of its nature, with a gamut of often vague personal ailments (ever!), their spouse's ailments, their pet's ailments, their dwelling's deterioration, any dying tree in the vicinity, the failure of their vegetable garden, crabgrass in their lawn, etc., etc.

And environmental scientists and engineers don't help by trying to communicate scientifically (and ineffectively!) in terms of statistics, percentages and probabilities. One concerned homeowner once asked the writer as we stood together watching a driller install a new, deeper water-supply well in his front yard to replace a shallow contaminated well, "Are we going to get cancer? Is our child going to die?" The homeowner said that he and his wife had decided against having another child, at least until their drinking water situation was resolved to their satisfaction, because of their perception of the risk associated with their drinking water. At a time like that, statistics and probabilities just don't cut it!

Scientifically, the 1995 introduction of RBCA, or "Rebecca" (Risk-Based Corrective Action), a procedure promulgated under the auspices of the American Society for Testing and Materials (ASTM), provided environmental scientists and engineers with a defensible way to quantify potential risks at an environmentally-impacted site, but left those same scientists and engineers without any guidance about how to communicate the implications of "risk" to the lay public.

Such communications with the lay public come with a whole new set of risks all their own:

- "Why are you talking in terms of probabilities? I asked you a yes-or-no question."
- "Why are you using statistics to explain what's going on? What are you hiding?"
- "Why are you assuming so many things? Don't you *know*?"
- "I don't want to know about one-in-a-million, I want to know about my family."

The Remedy

Communicating science to the public is as easy—or as difficult—as putting yourself in your listeners' shoes and asking "What's in it for me?" Psychology to the rescue!

The very same approach is used by salesmen the world over, whether selling widgets to people in other countries ("A widget in every household!"), political slogans to voters ("Vote for me!") or concepts ("Your sickness is actually caused by invisible things called germs.").

This age-old approach has been updated and modernized for the 21st century by the Internet and by Web page designers who speak in terms of "content" and who focus on essence, value and significance (to the *audience*). For example:

- Content: "Your drinking water is contaminated with benzene."
- Value: "Your health is at risk."
- Significance: "There are effective remedies that will protect your health."

A successful—effective!—communicator of scientific information is one who recognizes this and can state the "nugget" of his activities—from his listeners' perspective!—in a few sentences in less than a minute—the so-called "elevator speech" (Daughton, 2001, p. 11, http://epa.gov/nerlesd1/chemistry/pharma/images/book_jasma.pdf).

Serious ongoing efforts to communicate scientific information accurately, yet effectively, range from the elementary (http://www.oehha.org/science_edu/) to the sophisticated (<http://www.sra.org/rcsg/rcsgsources.html> and <http://cfpub2.epa.gov/ncea>).

So what's an environmental specialist to do?

- Focus on the customer!

This implies that you know who your customer is and you are able to say—concisely—why your communication is important to him.

- Empathize!

Put yourself in your customer's place and *listen*. Would you understand what you're saying? Would you *believe* it?

- Ask for feedback!

If your customer is able to explain back to you what you just said, then you're on the right track to successful communication. If not, try another tack.

- Don't "count beans" just because they're easy. Adopt a cause-and-effect forensic approach. You know the effect: the site is adversely impacted! What are the causes? The actual, real causes? Only when these are known can effective remedies be identified.

Vapor Proof Your Gasoline Tank System This Ozone Season

By Colin Gomes

The Ozone Season (May to October) reminds us of the harmful effects of air pollution. At this time of the year, there are ozone alerts that warn us of dangerous levels of ozone in the atmosphere and remind us to conserve energy, guard our health and prevent air pollution.

Since the Federal Government has noted that the air in all three of Delaware's counties fails to meet the health standard for ozone smog, we all should to do our part to limit the damage that ozone can cause.

Owners and operators of gasoline storage tanks that dispense to motor vehicles and boats can operate their systems to make the lowest possible addition to our air pollution problems.

DNREC's Vapor Recovery (VR) Program regulates all gasoline storage tanks above 250 gallons installed after January 1, 1979. It regulates tanks above 550 gallons that are exclusively used to fuel farm equipment. But, whether your tanks are regulated by the VR Program or not, you can regularly check your tank system for vapor tightness to protect our environment.

Here are some of the things you can do:

- Examine your tank filling accessories, including fill tubes, adaptors and caps. Each one of these components contain a rubber-like "O" ring that, over time, deteriorates and causes gasoline vapor to leak out of the tank. Make sure that the locking device on the caps still work and that they are firmly secured to the adaptors. Also, make sure that your gasoline storage tanks have fill tubes that extend to within six (6) inches of the tank bottom. This device prevents the gasoline from splashing as it flows into the tank. Consider adding a diffuser at the end of the fill tube or tank bottom. Preventing splash filling limits vapor growth, which limits vapor leakage to the air.

- Check the normal vents on your underground and aboveground gasoline storage tanks to make sure that they are still working. Also check the emergency vents on your aboveground storage tanks. These vents can stick open or closed for various reasons, including freezing. A vent that remains open is wasting your gasoline and polluting the air. A vent that remains closed prevents your tank from expanding and contracting normally. If cold weather causes the vent to freeze shut, or if the vent has been painted, the working parts and drains may remain sealed. The closed vent causes vapor pressure to build and force itself through any other opening.

A gasoline vapor leak at ground level is wasteful, polluting and dangerous.

- Check the nozzles on your dispensers. Make sure that the automatic shut off valve works by dipping the tip of the nozzle spout in a container of enough gasoline to cover the hole near the tip. With the nozzle in the container, try to dispense gasoline; the nozzle should shut off immediately. If it does not, replace this nozzle. Also, check the hoses and breakaways for wear and damage.

- Remove gasoline from spill buckets after a product delivery. Most spill bucket lids are not vapor-tight. If you do not properly dispose of this spilled gasoline, it is not much different from having an open container of gasoline at your facility. Part of the gasoline evaporates around the lid; contributing to air pollution, while the liquid poses a fire hazard and may cause ground contamination.

- Walk around your atmospheric aboveground storage tank, or over the top of your underground storage tank, and around your product dispensers. You can observe obvious damage to the accessories, but you cannot tell if your tank system is vapor tight. To confirm that your tanks and accessories are vapor tight, leak testing is recommended. Most tanks regulated by Delaware's VR Program annually test at ten (10) inches water column (WC) pressure. If your tank is unregulated, have a testing contractor cap the normal vent, and pressurize your tanks to at least five (5) inches WC while applying a soap solution to the tank and all its accessories. In most cases, the absence of soap bubbles and no major drop in pressure confirms a tight system.

If you regularly inspect your system, replace damaged parts, clean up spills and test your tank system, you ensure that you did your best to protect our environment this Ozone Season. If you have any questions about the Vapor Recovery Program, please call us at 302-395-2500.

References:

http://www.dnrec.state.de.us/air/aqm_page/stopo3.htm

http://www.dnrec.state.de.us/air/aqm_page/regs.htm

http://www.steeltank.com/_synmrkmail/messages/tanktalk_vol20_number1.html

<http://www.arb.ca.gov/testmeth/vol2/2004vol2.htm>

OPW Installation Instructions H-14072-M (May, 1999)

THINK TANK

Becky Keyser, Editor
Emil Onuschak, Jr., Asst. Editor
Gary Charles, Publisher
Frank Gavas, Graphics
Tripp Fischer, Technical Editor

Contributing Staff

Colin Gomes
Tara Chambers Susee

DNREC
Tank Management Branch
391 Lukens Drive
New Castle, DE 19720
Tel: (302) 395-2500
Fax: (302) 395-2555

Alex Rittberg
Branch Manager

David Brixen
Technical Group Program Manager

James Harlan
Director, Boiler Safety
(302) 744-2735



Announcements

David Brixen – promoted to Program Manager I. David was a compliance project officer for USTs for eleven years and will now be supervising the UST and LUST groups.

Patrick Boettcher – was hired in July 2005 as a Hydrologist for the LUST Program. Patrick previously worked for an environmental consulting firm and graduated from the University of Delaware with a bachelor's degree in geology.

Brian Churchill – promoted to Environmental Scientist III. Brian is a compliance project officer in the UST Program and is a member of the FIRST Fund workgroup.

Peter Rollo – promoted to Environmental Engineer IV. Peter is responsible for installation and retrofit approvals, and vapor recovery permitting for both USTs and ASTs.

Updated Guidelines for Retrofit and Upgrade Work

The Tank Management Branch recently updated its guidelines for retrofit or upgrade work. If you are planning to perform retrofit or upgrade work in the future, please make sure that you have the latest guidelines dated "May 2005".

Changes include the following:

- The TMB may require a tank integrity assessment of USTs protected by cathodic protection systems that are inoperable or not properly functioning.
- Soil samples are required for installation of spill containment or tank-top sumps regardless of whether or not excavation is required to perform the installation.
- In addition, samples may be required at the TMB's discretion for other work that requires breaking concrete and exposing the backfill, but is not specifically listed.

These updated guidelines may be found on our web page at :

<http://www.dnrec.state.de.us/dnrec2000/Divisions/AWM/ust/cc/retrofitsamp.pdf>
or a copy may be obtained by calling the TMB at 302-395-2500.

DNREC/TMB
391 Lukens Drive
New Castle, DE 19720

Doc. #40-09-03/05/07/02

