Communicating Internally and Externally during a Response: Life's Lessons Over 32+ years….

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ABSTRACT

The author has served over 32 years with the National Oceanic and Atmospheric Administration (NOAA) first in the role of Scientific Support Coordinator (SSC) for 28 years and then as a supervisor of SSCs for five years. During this period, he participation in hundreds of actual emergency response events and exercises. He had numerous opportunities to witness both effective and not-so-effective methods of communicating, within a command post situation with other responders and incident command staff, and externally with the general public and media. The effective delivery of a message is greatly affected by circumstances under which you are operating, with whom you are talking, the information or message you are conveying, and the situation surrounding the event. Over many years, the author has gained practical experience through a variety of learning opportunities including professional development programs and on-the-job. His insights on effective communications are provided in this paper to show how messages can be delivered effectively, heard clearly and understood. Practical "tips," best practices, anecdotes, and concrete examples will be shared to help ensure your message is heard and understood. The author provides examples drawn from actual incidents including the Deepwater Horizon, MT Heibi Spirit, TS Athos I, as well as exercises including PREPs, EcoCanal, and SONS. In addition to these incidents, exercises and drills, the author has continued to expand his knowledge through classes presented by leading subject matter experts involved with the Alan Alda Center for Communicating Science, National Academy of Science, US Coast Guard, and NOAA.

INTRODUCTION

The inspiration for this paper stems from the professional need to communicate science to emergency response staff, command and stakeholders, and the personal observations of how this can go surprisingly wrong or right. Sometimes it is a fluke or coincidence that can cause a situation to go from good to bad, or vice versa. Most of the time, it is accounted for in preparation. Preparation includes understanding your subject matter, knowing subject matter experts (SMEs) to consult with, making connections with your audience – be they the unified command or the general public, understanding the level and depth of information that needs to be passed, and remaining calm.

In total, through 28 years as a National Oceanic and Atmospheric Administration (NOAA) Scientific Support Coordinator (SSC) plus additional five years as a Response Operations Supervisor (managing the SSC program from Maine to Louisiana), the author was the lead SSC for over 250 responses, and participated in numerous drills and exercises. The types of oil spills attended range from minor oil leaks from home heating oil tanks, to fishing vessels aground, to large oil tanker spills, to the mega Deepwater Horizon and Exxon Valdez spills. Additionally, our science support covers a host of other possible catastrophes. From biological contamination, radiation, chemical releases and train derailments, to terrorism attacks (World Trade Center), whale carcasses, floatable garbage events, sewage releases, marine debris events, medical wastes, law enforcement activities, and natural disasters such as hurricanes and flooding.

Each incident required a different knowledge set concerning the data analyzed and information shared.

The manner in which the information was delivered was customized to the audience. Some examples of the different audiences would include: United States Coast Guard (USCG) – from enlisted petty officers in the field to captains in the command post, up to admirals and the Commandant – industry responsible parties, state agencies representatives, politicians, lawyers, non-governmental organizations (NGOs), the media, and the general public.

In the Boston Globe Opinion section (McIntyre, 2019) makes the case that “In graduate school, scientists are trained to become expert researchers, but almost none are schooled in effective public communication. Neither are scientists customarily asked to reflect on the logical or methodological roots of their disciplines. As a consequence, some come quite close to buying into a fairly unsophisticated view called “naive realism,” which holds that science simply discovers the truth. When called on to defend their results, some therefore seem tempted to present their findings as fact and seem shocked when an audience of doubters doesn’t believe them. But you don’t convince someone who doesn’t believe in evidence by presenting them with more evidence. You do so by helping them to improve their reasoning.” This is clearly the goal of a science advisor, to ensure the recipient of the data understands the value of the information presented and correctly interprets it to make the appropriate decisions.

DISCUSSION

In a report after a 2019 workshop held by the American Academy of Arts and Sciences (AAAS), Colwell & Machlis, 2019, discuss the need for science communications during crisis situations and identify areas for improvement. Of the five recent crises referenced in the report (the World Trade Center attack, Deepwater Horizon oil spill, Super Storm Sandy, Oso Landslide, and Zika virus outbreak) the author was the science officer for the US Coast Guard for the first three. Colwell & Machlis define science during crises to include conducting scientific research and analyzing data, as well as organizing staff, communicating, and archiving scientific and technical resources during the crisis event. Crisis events are most often acute disruptions and place-specific, with consequences for both people and the environment.

Colwell & Machlis further go on to identify science during crisis as requiring the engagement of scientists and engineers across a broad range of disciplines, including emergency managers, resource managers, policy-makers, business owners, and the public. Because crises impact people and infrastructure and/or environmental assets of societal value, science during crisis is necessarily human-centric. Science during crises helps guide decision-making, from search and rescue operations and environmental remediation plans to health monitoring and evacuation planning. Further, scientific work done in emergency response directly impacts the lives and livelihoods of survivors in a crisis-affected area.

Historically, science has played an important role in emergency response situations, and the scope of that work is broadening. The Office of Strategic Services (OSS), predecessor to the Central Intelligence Agency (CIA), recruited scientists and engineers to provide expertise and support intelligence efforts during World War II. More recently, National Oceanic and Atmospheric Administration (NOAA) Scientific Support Coordinators have served as technical experts to support the response to oil and chemical spills in U.S. waters. Other examples include the National Weather Service (NWS) Incident Meteorologist positions, the Centers for Disease Control and Prevention (CDC) created Global Rapid Response Teams, the Department of the Interior’s (DOI) Strategic Sciences Group (SSG), and the U.S. Geological Survey (USGS) coordination with the Federal Emergency Management Agency (FEMA) to ensure scientists are on site to provide situational awareness.

It is important to remain aware of the different circumstances surrounding internal communications within the command post setting and external communications with stakeholders and the public. In the command post the SSC or other Technical Specialist (Tech Spec) is invited to be a part of the command structure, and as such is a known entity coming with credentials and history. This make the SSC a trusted individual with an unbiased focus. To external audiences, this person is an unknown quantity. There may be misconceptions since this science person is working with the Responsible Party that they may be “in bed” with and plotting against the public interest. Trust has to be built over a very short period of time to ensure that the information is passed and understood. This is where the soft skills come into play.

Suggested recommendations from the report (Colwell & Machlis, 2019) relevant to this paper include: emergency-response and scientific communities should expand joint training and outreach/education and at the onset of a crisis, a central curated clearinghouse developed in advance should be activated to collect, disseminate, and coordinate relevant scientific information. These suggestions are all leading to the fact that it is not enough to just have the best data available, one must also know how to convey that data into understandable information.

Recommendations highlighted in the report for future research in the area of communicating science during crisis specifically mention that the delivery and presentation of scientific information during a crisis—to decision-makers, the media, and the public—can significantly affect emergency response, public safety, and restoration activities.

Key questions to address include:

1. What visualization techniques and methods of delivery or presentation are best-suited to communicating scientific information to different audiences?
2. What is the best way to:

   a) streamline technical communications for different audiences at different times;

   b) account for a variety of scientific perspectives and findings;

   c) address potential ethical concerns in the communication of sensitive data; and

   d) avoid information overload, misinterpretation, and unnecessary confusion?

SSC Training and Experience

Soft skills (identified at https://www.thebalancecareers.com/) are the personal attributes, personality traits, inherent social cues, and communication abilities needed for success on the job. Soft skills characterize how a person interacts in his or her relationships with others.

Unlike hard skills that are learned, soft skills are similar to emotions or insights that allow people to "read" others. These are much harder to learn, at least in a traditional classroom. They are also much harder to measure and evaluate.

Soft skills include attitude, communication, creative thinking, work ethic teamwork, networking, decision making, positivity, time management, motivation, flexibility, problem-solving, critical thinking, and conflict resolution.

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https://www.thebalancecareers.com/top-soft-skills-for-customer-service-jobs-2063746

NOAA's Emergency Response Division (ERD) spends extensive time and effort training SSCs on "hard" science subjects such as chemistry, biology, physical processes, and health and safety. To provide needed technical services, SSCs must also develop "soft" skills to enable successful interaction with clients and the response community. The soft skills SSCs need are listed below, but this list certainly does not include all the soft skills and abilities SSCs need to bring to bear during responses, planning sessions, meetings, and their many other activities.

"Soft" skills and abilities of SSCs include:

Communicating	Coordinating	Negotiating	Organizing	Humor
Cooperation	Planning	Questioning	Leading	Confidant
Trainer	Writing	Demonstrating	Advocating	Initiative
Mentoring	Compassion	Navigating	Disseminating	Advising
Interpretation	Correlation	Anticipating	Institutional knowledge	
"Watchdog"	Listening	Empathetic	Teaching	Problem-solving

Future Implications

In an attempt to broaden the use of a science advisor to different disaster events, several Coast Guard officers and NOAA SSC described and proposed to FEMA the concept of a multi-hazard response science advisor based off the NOAA SSC role. FEMA adopted this concept and added the Science and Technology Advisor (STA) position onto the Incident Command staff in the September 2017 FEMA-509-v20170717 National Incident Management System (NIMS). Under the resource typing definition for the National Qualification System Emergency Management the STA *"provides advice and informs decision-making for all science and technology-related incident activities"* including:

1. Monitors incident operations and provides scientific and technical advice on matters relating to the integration of science and technology into incident response efforts
2. Enhances safety, assists in incident action planning, and informs decision-making for all science and technology-related incident activities

3. Consults with subject matter experts in the scientific and technological communities to gather information, serve as a liaison, and make recommendations to the incident command, Unified Command, or center director

4. Maintains an extensive network throughout the scientific community and draws from this resource as necessary to help inform incident operations

5. Ensures proper information management of scientific data acquired during incident operations and field testing

6. Disseminates technical information and training to all response personnel who may need special knowledge relating to incident planning and response activities

It is further suggested here, that the STA position also include skills and training in communications and outreach (as listed above for the SSCs), for communications both internal to the ICS and externally to other stakeholders.

Life Lessons Learned Through the Years

Know Your Facts:

- People want accurate information about what happened and how that event might affect them. (Barton. 2001)
- Information should be consistent.
- Because of the time pressure in a crisis there is a risk of inaccurate information, if mistakes are made, they should be corrected ASAP.
- The philosophy of speaking with one voice in a crisis is a way to maintain accuracy.

- Speaking with “one voice” does not mean only one person speaks for the organization. It refers to using an agreed upon set of facts to disseminate information.

Talk About What You Know:

- Let the audience know your credentials and reason for talking with them – why they should believe you.
- This includes life experiences as well as academic degrees. The life experiences may even outweigh academic learnings.

Know What You Don’t Know (as much as you can):

- It is perfectly reasonable to respond to a question by stating that you do not know the answer and will attempt to get that information at a later time.
- My favorite quote from a colleague, Dr. Jerry Galt, is “We reserve the right to be smarter, later.” This infers learning as new data becomes available and adjusting hypotheses and potential outcomes to fit the new information.
- Deliver all information promised to stakeholders as soon as that information is known.
- A quote, from Dr. Jacqui Michel, pertaining to the vagaries of responding to an oil spill is “I’ve never been to the same spill twice.” The interpretation of this is that something is always different, and just because you were at a similar incident, does not ensure that the new incident will have the same outcome.

Know Your Audience:

- Set the appropriate tone and voice for your message. This includes your appearance.

- Present information clearly by avoiding jargon or technical terms.
- Use analogies as appropriate.
- Lack of clarity makes people think the organization is purposefully being confusing in order to hide something.

Be Empathetic:

- Show your humanity. Allow people to see you are human as well as a representative for the response.
- Connect with the people you are talking with (not to).

> "Developing empathy and learning to recognize what the other person is thinking are both essential to good communications. Communications does not take place because you tell somebody something. It takes place when you observe them closely and track their ability to follow you. The responsibility really belongs to the person speaking, not the person listening." – Alan Alda (Alda. 2017)

Use Your Heart and Mind:

- Remember you are dealing with a stressful situation. Try to not make it any more stressful.
- Be sympathetic to the situation surrounding the incident.
- Remain calm.

Social Awareness:

- Be aware of others inner state (empathy).
- Grasp their feelings and thoughts (Theory of Mind).
- Recognize complicated social situations (understanding).

Instead of ***But*** *Use* ***And Yes*** *– make it positive:*

- “And yes” helps expand the conversation.
- “But” narrows a conversation and appears to contradict.

Tell a Story:

- Stories are powerful ways to connect to people.
- Everyone loves a good story. Take your message and see how you can craft it into a story with a beginning, middle and end. Design a plot – good versus evil, a twist they do not see coming, overcoming adversity, etc.
- Analogies may be helpful if they are understandable and relevant.

Start with the End – Why are you here – your positive goal:

- Introduce up-front the purpose and message synopsis.
- Let people know what to expect.

Avoid:

- “I know what I am talking about and that ends the discussion.”
- “You won’t understand.”

- "Trust me."

Real-world Case Lessons Learned

The following incidents have been real-world case used here to illustrate some of the items enumerated above:

- **Paulsboro, NJ vinyl chloride incident (2012) – Know Your Audience:** A Town Hall meeting was initially set up to inform the public concerning the current state of the response. It was to be a college-fair type of event. The public address system failed and in order to be heard one of the NJ representatives began shouting at the audience. The crowd began shouting back and the moderator began losing control of the situation. Ultimately, a USCG Public Affairs Specialist took the podium and organized people to begin going to the appropriate booths to get their specific questions answered. This refocused the event back on track. Otherwise it was heading to be a disastrous mob situation.
- **DWH (2010) – Tell a Story:** During a briefing with Adm. Thad Allen (USCG, retired) he asked about the status of the dispersant operations that were occurring for many weeks. To best describe the situation, the author used a Star Trek analogy stating "We are in uncharted territory." He understood that we had exceeded any previous experiences we had using this quantity of dispersants and we were learning as we went along.
- **DWH (2010) – Use Your Heart and Mind:** During a Town Hall meeting set up to discuss dispersant operations with the public a specific connection with a couple stood out. They were very concerned about the possible effects the dispersant would have on the water quality and how it would affect their children. The husband was wearing a

Harley Davison tee-shirt. The author connected to him first as another Harley owner, then found out their specific concerns and was able to alleviate them by giving the parents the facts about where the dispersants were being applied, the ongoing monitoring, and the safety measures in place.

- **DWH (2010) – Be Empathetic:** The USCG Incident Commander attended a Town Hall meeting to discuss the response efforts. His opening statements talked personally about his dedication to the public to make the response as effective as possible. He stated he was missing his son's birthday that evening to be here working and talking to the audience. As most of the audience were parents this had a direct impact on them.
- **DWH (2010) – Talk About What You Know:** In an early press interview with the media, to help set expectations, the author stated what he knew from previous response experience and the movement of oil on the water, that the oil will eventually come ashore. This was the first time the subject was mentioned. Within the next couple of weeks, the oil came ashore.
- **MT Rio Puelo "Lemon" incident (2004) – Know Your Facts. Know What You Do Not Know:** During this response there were many gaps in the knowledge of what the actual threat was. The SSC had to translate a complex bioterrorism threat from the science group to decision-makers with a great deal of uncertainty. As it turned out, the whole incident was a hoax, but it turned out to be a great learning opportunity and exercise for the response community.
- **TV Athos I (2004) – Start With The End, Managing Expectation:** After the Salem Nuclear Power Plant shutdown due to oil in its intakes, the USCG Incident Commander told me "It's up to you to tell them when to restart the nuclear reactor." After sleeping on

this directive, the next morning, the author told the Captain that it was my job to provide the information to the plant operators and their decision when it was safe to restart the power plant.

- **TV Hebei Spirit (2007) – Know Your Facts:** While discussing the effectiveness of dispersant operations, the Korean Coast Guard commander asked “How do we know if the dispersants are working?” My rhetorical reply was “Did you look?” Not being facetious, the author discussed how to monitor for dispersant effectiveness both in the water with instrumentation and visually from the air.
- **San Jacinto spill (1994) – Know Your Audience:** The Unified Command attended a town hall meeting with local residents. The degree of outrage by the attendees was not anticipated. There was a great deal of hostility and anger about how the incident was affecting property owners. The Unified Command did not have the confidence of the public nor were they able to overcome the animosity present. This turned into a terrible Town Hall event due to lack of preparation.

CONCLUSIONS

Oil spills, are by definition, chaotic events. Conditions often change rapidly as the oil moves through the environment and is subject to currents, waves, weather and whatever is in its path. When time and resources are limited, responders need sound science to make informed decisions to minimize impacts to natural resources, and the communities and economies that depend on them.

NOAA scientists must also quickly help determine what the properties of the oil are, where the oil is going, what organisms and environments are in its path, and what can be done to help mitigate the impacts to minimize exposure and injury to natural resources. NOAA experts need to be able to communicate their facts, discuss the uncertainties and discrepancies – as there may be more than one way to interpret data, and enable decision-makers within a command post to understand and move forward as time is usually of the essence in these incidents. Additionally, the data that decisions have been based on need to be made available to the public and media in understandable ways, which will by necessity be different than communicating within the command post.

While the gaining of scientific knowledge can be obtained through books, schooling and study, the ability to pass on that knowledge is another skill altogether. The ability to communicate takes a different set of skills, practice, feedback, and overcoming hurdles. There have been numerous studies and observational instances of leading experts in their field of studies not being capable of fluently explaining the content, context, and implications of their work to people not in their field of expertise. The implications of this are very different when science communications hinges on quick decision-making when 100% of the facts are not in. The essence of this paper is to demonstrate the need for “soft skills” to coherently and sympathetically communicate “hard science” facts and figures to people without advanced degrees in hard science.

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