

THE SCIENTIST, THE PAID CONSULTANT AND BUILDING PUBLIC CONFIDENCE IN WASTE MANAGEMENT -- A MINE FIELD

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ABSTRACT

Differing scientific opinions that surface during the siting of nuclear waste disposal facilities present serious problems in the communication of risk to the public. In a time when public opposition to "nuclear waste dumps" threatens to stunt the nuclear power industry, risk communication is a fundamental element of any disposal facility siting program. The public demands definitive answers and is skeptical when scientists fail to come to a consensus or put forth scientific "truth."

The problem is compounded when questions of scientific integrity enter the picture. Two cases, the Illinois LLRW disposal facility siting process and the Yucca Mountain HLW disposal facility project, provide important illustrations of the consequences that result from breaches of scientific integrity. In both examples, investigators have been accused of bias because their data reflect serendipitous conditions at proposed waste disposal sites. In the Illinois case, scientists have confessed in public hearings to having felt under pressure to report "positive" findings at the proposed Martinsville site. At Yucca Mountain, questions have been raised about a primary investigator who refuses to dismiss data thought to support site suitability that was obtained through experimental techniques and contradicts information provided using more accepted methods.

This paper intends to explore the issues surrounding public perception and the objectivity of paid science.

INTRODUCTION

In a time when public opposition to "nuclear waste dumps" threatens to stunt the nuclear power industry, risk communication is a fundamental element of any disposal facility siting program. A lot of attention and energy has been focused over the years, and particularly of late, on "building the public's trust and confidence" to support the siting and construction of nuclear waste disposal facilities. In fact, the Secretary of Energy has assigned a special advisory board the task of studying the department's failure to instill trust and confidence in the past and finding ways to mend the breach. That task force underscores an industry-wide belief that ensuring public trust and confidence is an integral part of any siting process.

A corollary to that belief is that in order to achieve trust and confidence, there must be open scientific debate. While we agree these elements can strengthen the siting process, airing scientific disagreements without sufficient forethought and significant public education has the potential of undermining public confidence. Open scientific debate is an important aspect of public outreach programs, but it is not the sole basis on which such programs can be built. Our observations suggest that the question of whether open debate adds to a siting program depends largely on how the process came into being, how it is carried out, and whether the public is educated enough to understand and participate. Unless there is a vigorous effort to educate the public and to dispel falsehoods early on in the program, an open scientific process may have a result opposite of what was intended.

We found two contradictory perceptions associated with scientific investigations both at the proposed Martinsville, Illinois LLRW disposal facility site and the proposed Yucca Mountain, Nevada HLW site:

- In general, the public is not that interested in the scientific intricacies of site investigations, nor do they understand the science.

- There has to be scientific debate in a public forum to legitimize the siting process.

But while airing scientific debate can boost the perceived credibility of the siting process, it also provides ammunition for environmental groups whose main interest is in opposing the facility. Recent polls indicate the public still generally trusts scientists, despite recent negative attention focused on things like clean-up of the nuclear weapons complex, the Hubble telescope, and other advanced technologies. But divergent scientific opinions that surface during the siting of radwaste disposal facilities, whether among agency scientists or between the agency and opposition groups, complicate the already difficult task of communicating risk to the public. When the public wants definitive answers, failing to come to a scientific consensus and put forth scientific "truth" feeds the pervasive skepticism that already exists.

The problem of building confidence in science is compounded when questions of integrity enter the picture. While such questions can translate into many scenarios, we chose to deal with who pays for the work--an issue the media is increasingly sensitive to. The Illinois case and the Yucca Mountain case provide illustrations of the consequences of perceived breaches of scientific integrity. In both examples, investigators have been accused of bias because their data support the suitability of proposed waste disposal sites.

This was not meant to be a scientific study. Nor was it undertaken for the purpose of pointing fingers. It is merely our attempt to throw up some flags and foster a discussion of these issues.

THE ILLINOIS HEARINGS

Martinsville residents largely supported hosting the Illinois LLRW disposal facility before the Department of Nuclear Safety's (IDNS) investigations began. The proposed site is supported by the mayor, the city council, and members of the local citizens' advisory committee, in addition to individual residents of the town. In a November 1988 referendum, 68 percent of Martinsville voters supported locating the

facility in Clark County. That number fell to 56 percent in a November 1990 referendum. We believe that initial support, largely based on economic benefits, plays a major role in the public's perceived indifference to controversies that developed during public hearings on the suitability of the site.

In 1990, Illinois lawmakers set up an independent siting commission to evaluate characterization studies conducted by IDNS, which also serves as the licensing agent, to mitigate any perceived or actual conflict of interests. That action was prompted by allegations that prior to their final release, the IDNS altered site reports approved by the state Geological and Water Surveys. The IDNS directorate resigned, and the reports were subsequently changed back to their original state. These circumstances represent a worst-case approach to public outreach--the open forum was introduced following a breach of public trust.

The siting commission began adversarial hearings on the proposed Martinsville site in June 1990. After 69 days and 107 witnesses, the taking of testimony ended Feb. 2. Now only closing arguments and the commission's deliberations remain. The three member commission is chaired by former Illinois Supreme Court Justice Seymour Simon. University of Illinois Dean of Civil Engineering William Hall, and former Sierra Club field representative Carolyn Raffensperger also presided over the quasi-adjudicatory process.

The Illinois hearings essentially gave site opponents the opportunity to publicly and systematically dispute the IDNS's case supporting its proposed site. Funding provided to Concerned Citizens of Clark County by the Central Midwest Compact Commission, awarded through the League of Women Voters, allowed opponents not only to state their case, but to support it with their own expert testimony. Over the course of the hearings, the siting commission heard two divergent scientific evaluations of the site.

Scientific Disputes and Public Perception

We have chosen one example from the hearing process to illustrate the effect of scientific controversies on public perception. Local opinion leaders seem to feel the airing of disagreements during the hearings had little impact on the local population, and suggested they paid little attention to the technicalities of the debate.

A couple of IDNS contractors admitted under cross-examination feeling pressure from former agency officials after submitting preliminary models that would not have supported selection of the Martinsville site. Despite feeling pressure from IDNS to change their models, the scientists contend that pressure did not affect their objectivity. Following subsequent dialogue on the data and reflecting new information, the models eventually came to support IDNS's selection of the Martinsville site.

We spoke with one scientist, Kathy Troost of Shannon and Wilson, about the pressure from IDNS:

I certainly felt something. I have a hard time describing what it was, but it didn't stop me from doing the science the way I felt was the objective way to do it. ...It was never clear what was the source of the friction, but it came from the department. ...Whatever it was that I felt, it did not affect my work. It may have actually enhanced the work because it brought more attention to the issues that at the time needed more attention. So, it had a positive outcome. I think that

might be hard for a lot of people to understand--that there are differences of opinion among the scientists, and that's very healthy for evaluating subsurface conditions. You certainly don't want to get one train of thought and one closed mind. You need to have constant challenging of the interpretations.

Leon Gobel, an engineer and member of the Martinsville Citizens Advisory Committee, said the allegations of pressure "did not surprise" him. He agreed with the contention the pressure "didn't affect the scientists' objectivity." He suggested it was rooted at the management level and remained there. "I don't think the public is aware there are differing opinions. I think they see it as pretty black and white, and have a difficult time understanding that it's not," he said.

Local journalist Greg Gravemier, who covered the hearings for the Clark County *Reporter*, observed "the hearing process in Illinois has been so inconclusive, it has to some degree built public trust in the system. ...But I don't think [the disagreements] make much difference to most people." He explained his comments this way:

Once the lines are drawn, people who support project will probably never be against it no matter what's proven about the site, and vice versa. People just don't change their minds when backed into a corner -- there is pride at stake. In a process like this, you will always have the opposition groups that will attack a site, whether legitimately or not. You just have to worry about the silent majority, what they say, and how strongly they feel. I think actual strong opposition is a very small minority of the local population.

Current IDNS director Tom Ortziger, optimistic about the outcome of the hearings, concurred with the belief that of the scientific information generated, "a good deal of it was lost to the public." The reason for having open hearings, he explained,

is to demonstrate that the parties bringing a site forward are saying that we are opening ourselves for public scrutiny. But certainly the public loses rather rapidly any ability to interpret any of that material. The reason you do it is to show you have a fair and open process, but it's a mistake to assume people will be able to interpret it and arrive at their own conclusions.

Determining the objectivity of project scientists "is part of the hearing process," he said, "to gauge and draw conclusions as to veracity of individual witnesses. You're not going to be able to isolate these people to the point where you can say they are totally operating outside of the influence of any parties that have a concern or any interest in this matter. That is just not the reality of how any hearing of this type can be put on." The only way to answer the objectivity question in Ortziger's view is "by people being able to judge the character and demeanor of the witness. Otherwise, you're always going to have some question about whether they have a motive for testifying the way they are."

But the siting commission has an entirely different view. Judge Simon, the chairman, told the *Exchange* that at the end of the hearing process, "the commissioners were left with the perception that many witnesses, instead of trying to be open and helpful, have tried to maintain the position they advanced before the hearings even started." The commission walked

away feeling "that many witnesses, instead of coming to tell the truth, have come with the idea of doing everything to support the position they took" before the hearings began. He elaborated,

It appeared that much, if not all, of the science supporting the site was science that was arrived at by consensus and without disagreement at the end. And at times, members of the commission questioned whether that was the best way of going about scientific study. Then the Concerned Citizens came along and they were on the attack. I'm sure it would have been more comfortable for those in favor of the project if they didn't have this attack and examination of uncertainty. The Concerned Citizens did a great service in helping the commission make up its mind.

Public Trust in the Process

The local reporter said he "would like to see the facility come here, but if I was on the commission I would vote no" based on what came out during the hearings. He explained his support for the facility, despite the opposition's arguments during the hearings, saying he generally trusts the scientists to do objective science, and doesn't think they would be swayed by who pays their salaries. "The sciences are so inexact, that the range of interpretations and possibilities by reasonably competent scientists all in the same field is wide open," he offered. He reported the siting commission took a skeptical stance in questioning IDNS scientists and contractors, while it seemed to "bend over backwards to be fair to the opposition." In his view,

the commission believes IDNS is dead-set on putting [the facility] here, no matter what, that Chem-Nuclear is a greedy company associated with Waste Management, that Concerned Citizens are trying to save the environment and the local population--that's the attitude they used in questioning and bringing up issues. It's hard to imagine it's just for show.

The Martinsville citizens' advisory committee member said he didn't think Martinsville citizens paid close attention to the proceedings because "they went through it all before. They learned what was going on through reporting in the local paper" during site characterization. That coverage tended to be balanced and fair, Gobel said, and aided in the public's understanding of the issues. But he also said the local citizenry "trusts the engineers to do it right. Either they do or they don't trust them, but I don't think Martinsville people were affected by the IDNS paying the bill" for site evaluation. He agreed with our opinion that such an attitude implies there is already trust in the process.

He added that models "should be expected to change as more data comes in." But he attributed his understanding of the process to being an engineer, and said he thought it was difficult for the general public to understand engineering studies. Disagreements between scientists and modification of models affect people's trust "only if the individuals want it to," he said. If someone doesn't want to trust, "they might make more out of it than a person who trusts" the process.

The siting commission chairman said,

If we didn't have the controversy, if we didn't have the Concerned Citizens there who cross-examined the proponents vigorously and at length, our job

would be easy. We would have only one story before us. We would have no way of determining whether it was accurate or inaccurate. I don't know how we would have arrived at a sensible conclusion or one we would have had any confidence in, because it would not have been a tested one.

Asked if a no-vote was in the realm of possibilities, commission chairman Simon said, "Of course that's a possibility, but on the other hand the commission may decide it is a safe and suitable site." He doesn't know how much weight public testimony will carry in the commission's final decision but said, "all the public witnesses were extremely helpful and all sincere." He noted it was "shocking to the commission how many public witnesses said they do not trust their government."

Observations

The Illinois siting commission hearing process was lauded by nearly everyone involved. The success of that process can be attributed to several factors:

- Martinsville citizens largely supported hosting a LLRW disposal facility from the beginning, which implies in a good deal of trust in the objectivity and scientific integrity of the siting process.
- Coverage by the local paper was considered balanced and fair.
- An intelligent adversary provided on-going challenges to arguments put forth by the siting/licensing agency.
- Project scientists are generally perceived to be objective; concerns about objectivity are raised at the management level.
- An independent, neutral siting commission presided and will make a final determination on the suitability of the site.
- The commission chairman has made known his displeasure at the way some scientific conclusions were arrived at, and the apparent subjectivity of scientists in testifying about their work.
- Even with so much going for the site from the outset, whether the Martinsville site will be accepted is **definitely not** a foregone conclusion.

THE NEVADA EXPERIENCE

Most people are familiar with the political process that resulted in Nevada being picked as the single site to be characterized for a national HLW repository and the vehement local opposition that has ensued. Opinion surveys conducted by the industry and by the state in 1991 put opposition in Nevada to a Yucca Mountain HLW repository at 61 and 80 percent, and Nevadans approving of a repository at 35 and 15 percent, respectively.

The dissimilarities between Nevada and Illinois in designating a site for characterization are clear, as are the differences between LLRW and HLW disposal. But we believe important parallels can be drawn. We have outlined two examples of scientific disagreements in Nevada that have sparked questions about scientific integrity.

Differing Views from within DOE

Department of Energy geologist Jerry Szymanski proposed a theory under which, if true, the Yucca Mountain site would not meet site suitability criteria. He suggested that calcium carbonate deposits just below the surface indicate groundwater had been present above the depth of the repository in the past, and postulated that seismic events could occur that would cause the water table to rise again and flood the repository.

Szymanski's preliminary report was first made public in 1987 not by the department, but by then-governor Richard Bryan, an outspoken repository opponent. At the time, DOE officials explained they did not release the study because it had not yet undergone peer review. Irritation at the way the release was handled persists today, on both sides. Szymanski's work at Yucca Mountain has been widely publicized, and even made the cover of the *New York Times* Sunday magazine.

A review panel composed of two scientists selected by Szymanski and three by DOE Yucca Mountain Project Office Director Carl Gertz recently released a split decision on the theory's validity that broke along predictable lines. The panel's inability to reach a consensus opinion reinforces the perception that loyalties color the outcome of the scientific process. A National Academy of Sciences panel, expected to reject the hypothesis, will release its review in the coming weeks.

A number of scientists, even some funded by the state of Nevada, have questioned the validity of Szymanski's conclusions. Many have challenged the integrity of his science. But among those who reject his theory for lack of scientific evidence, a significant number agree he raised important issues that merit further consideration. There remains a small, quiet contingent of scientists who believe the theory is far from disproved. Meanwhile, Szymanski has announced his resignation from the department, effective this spring.

We discussed the Szymanski controversy with Nevada Senator Bill O'Donnell (R), the only state legislator so far to come out in favor of negotiating benefits with the federal government and allowing Yucca Mountain characterization to go forward. "The general public doesn't understand one-one hundredth of what Szymanski was talking about," O'Donnell said. "They can conceptualize that he disagreed with DOE, and DOE fired him--so he must have been right. That's the perception, right or wrong." Mary Manning, reporter for the *Las Vegas Sun*, concurred. "People in Nevada think DOE ousted him," she said. Nevada Nuclear Waste Project Office Director Bob Loux said it is widely believed "he has essentially been either forced out, or things were made so difficult for him that he had to leave."

Steve Frishman, also of the Nevada Nuclear Waste Project Office, explained the significance of the controversy on the local population. He suggested "the more the public understands, maybe at a not very detailed level, of the fact that there are some real big concerns about the suitability of the site, the more it reinforces their political response." Reporter Manning said the fact Szymanski's work was released by the governor and not DOE reinforced Nevadans' already negative image of the department. Loux said the perception is that "if the governor hadn't done it, the report would have never seen the light of day." And the fact the report "received a mixed [peer] review is viewed with the caveat that DOE reviewers

were hired to support DOE's position," Loux said. Historically, when scientists have disagreed with the management's view, according to Loux, the department's response is "to convene a peer review they essentially control, and put that other viewpoint to rest. The process has been manipulated and stacked from square one."

The pro-characterization, pro-benefits senator, frustrated by what he views as a misinformation campaign by state officials, exclaimed, "People want to know. They are crying out for information. They are asking for political as well as scientific truth--yet we're not getting the truth."

People seem to agree that airing the issue has added to the legitimacy of the program. In Gertz's view, "the public understands there are differing views and that we're airing them -- that Szymanski hasn't been dismissed. He's been on the project four years and continues to present *his theory*, and we encourage that differing opinion." Grant Sawyer, former governor and chairman of the Nevada Agency on High Level Nuclear Projects since its creation, said he felt the Szymanski issue got fair treatment in the press, and praised DOE for allowing the issue to be aired publicly. "DOE took the view that even scientists differ there are some that do not agree with them." Frishman also thought the Szymanski controversy was "healthy" for the program. He explained that Szymanski was "doing a good job of trying to do geology--getting as much data together as you can, then figuring out a hypothesis that explains as much of it as possible." He added, "I don't know whether he's right or wrong," but the important thing is to "synthesize large amounts of data, whether you like it or not, and whether you think it is relevant or not."

Observations

In some ways, this controversy may be the best thing that has happened to the department in a long time. It provided DOE with the opportunity to publicly air a challenge to Yucca Mountain's suitability that arose from within its ranks. Whatever the outcome of the National Academy review, DOE will be able to say Szymanski's hypothesis was widely scrutinized. But with all the openness of this debate, the *New York Times* never has run a cover story on the scientists that disagree with Szymanski.

As in the Illinois siting process, people from all sides praised the open scientific debate. The Szymanski controversy received wide publicity and for that reason may never be put to rest completely. The issue is complicated by the following factors:

- Who releases information is nearly as important as how the information is released--it is more helpful to the siting process if information which may be detrimental to a site is provided by the investigators rather than the opposition. The perception that DOE sought to suppress the report, while invalid, has helped to reinforce the political response of Nevadans opposed to a HLW repository, and persisted in the way Nevadans view Szymanski's departure.
- Local opinion leaders believe Nevadans view Szymanski as having been forced out. They have no reason to correct that view, and it could be said they are reinforcing it. Szymanski's decision to leave DOE may have a lasting impact on Nevadans.

- Even scientists who disagree with Szymanski agree he performed a service in raising issues that must continue to be studied. It is important this message is not obscured in debates over his integrity--and more importantly that it is not lost on the public--because it acknowledges some legitimacy in his work. Questions about Szymanski's integrity have led a number of scientists to reject both the man and his theory. But doing so has the potential of reinforcing the perception that DOE is hiding something, which can only heighten the local population's political response.

Criticism from Outside

Two US Geological Survey scientists, Duane Champion and Brent Turrin, have challenged a model of volcanic activity at Yucca Mountain developed in part by Los Alamos geologist Bruce Crowe, principal investigator of volcanology for the Yucca Mountain Project Office. Champion and Turrin date the most recent activity at the Lathrop Wells volcanic cone at 120,000-140,000 years ago using "proven" dating methods. Others question the accuracy of those methods to predict younger ages, and postulate the cone is only 10,000 years old, using techniques characterized by Champion, Turrin, and others as "experimental." Crowe maintains that he does not reject the older dates, and says he will consider all relevant models, including experimental ones. He expects that a consensus will develop over time. He is also investigating "polycyclic" volcanic activity in the area, a model Champion and Turrin charge is fatally flawed.

Champion and Turrin have questioned Crowe's objectivity in accepting "experimental" data sets, which they have said support models that are "useful for DOE's purposes." Crowe argues that evidence points to the younger ages and polycyclic activity, but maintains not enough work has yet been done to make a conclusive determination.

Champion and Turrin no longer receive funds to work at Yucca Mountain. Neither was paid directly by the Department for the work they did; in fact, nearly all of Champion's funds came from the USGS. Turrin is still funded through the University of California-Berkeley. They will continue working on related studies, but do not expect to work again at Yucca Mountain. Understandably, both sides in this debate offer different explanations for why they are no longer on the project.

This issue has not gotten any play in the general press, according to Gertz. In fact, the issue is largely esoteric, because resolving the difference in the ages is not expected to affect the suitability of the site. Gov. Sawyer said, "I don't think you'll ever be able to educate the public on those scientific niceties. Like any other complicated scientific matter, the public cannot understand. They do not understand, and are not interested in the specifics because they know they won't understand." According to Loux, the local press treats the issue of volcanism basically "as another example of the active geologic environment" at Yucca Mountain.

With an issue as technical as this, Senator O'Donnell said, "if scientists disagree, the public wouldn't know who to believe, and would be more nervous about the project. They won't take time to learn about the issue, so if there are two conflicting reports, it will make them nervous." State Senator Tom Hickey (D) commented, "I don't think people care about

the technical issues. Only a limited minority do." But Loux differed, saying there is a tendency to make "subjective determinations about what levels of information the public is capable of understanding. ...if anything, those in charge should go to greater lengths" to ensure public understanding. The local reporter suggested the issue is of interest to Nevadans simply because the disagreement exists.

Carl Gertz cautioned it is important to communicate to the public that there can be more than one right answer:

First of all, honest people disagree. I think first the public has to recognize that and then, second, they have to recognize that there is more than one right answer and a different set of data can fit many theories. The question is, is there a consequence that's of any great difference from the differing theories?

In a technical disagreement such as this, Senator Hickey said, he would "prefer to give both sides their integrity. There may be legitimate differences, and I don't know if we can resolve those." But Governor Sawyer disagreed, saying, "they are looking for definitive answers here in Nevada."

We asked Nevadans about their perception of the objectivity of DOE scientists working on the Yucca Mountain project. Governor Sawyer said, "you tend to parrot the views of people who are paying you." In a case such as this where DOE says one thing and other scientists take the opposite view, he said, "we know there is a difference of opinion, and we have to come down on one side or another. We're going to come down on the side of safety on this issue, given the fact that DOE cannot be trusted because of their sordid history over the years."

Senator Hickey was more willing to trust in the process. He said, "DOE is paying these people to produce a certain product. But on the other hand, we have state oversight, and the various funds and organizations set up to protect the environment, that are looking over their shoulders to see what they are doing. And ultimately, those scientists have to bring all their findings in a presentation for licensing before the NRC." Even Steve Frishman sided with the scientists: most DOE scientists "can be trusted to be objective in the work they do," he said, but added,

The place where the trust problem comes in is at the management level--what work are they assigned to do? They will do good scientific work, but if it is aimed at answering the wrong question, then it doesn't serve anybody. ...individually, scientists believe in their own reputations, and they want to do good, credible work because their peers see what they do, and they may need a job sometime. The question is, 'are they doing the right job,' not 'are they doing the job right.'

Observations

The volcanism controversy has received almost no coverage in the press to date. But despite the relative obscurity of the issue, there are a lot of similarities between this issue and Jerry Szymanski's theory.

- Preliminary information is available, but has not been widely distributed or picked up by local press. It would be in DOE's best interest to get this issue out in the open to avoid any appearance of trying to suppress an opposing view, which in the Szymanski

example serves to reinforce Nevadans' political response.

- There is an appearance, no matter how invalid, that scientists were removed from the project for disagreeing with the management. In terms of perception, perhaps DOE's best strategy would be to guarantee continued funding to the disagreeing scientists.
- Questions about integrity plague both sides in this debate, and may obscure the real issues. In the Szymanski case, even some among the many scientists who dismiss him as a schemer agree important, valid issues were raised by his work that require further investigation.
- In an area as complicated as this, where disagreements are bound to arise, it is imperative to get out the message that "right answers" may not exist. If eliminating disagreement is the goal, or is even perceived as the goal, public distrust will follow.
- Making a subjective determination that one area is too obscure for the public to care about or understand can be detrimental. Airing an issue, no matter how technical, can add significant legitimacy to the program.
- The fact that the public is more inclined to distrust project managers than project scientists increases the burden on managers to show the siting process is fair and open.

The Ad Campaign

The recent advertising campaign initiated by the nuclear power industry and the media training some Yucca Mountain scientists have received were not originally in the scope of our paper, but kept cropping up in discussions with Nevadans. The magnitude of the ad effort, and the perceived crossing of boundaries between public relations and objective science is relevant to the larger questions we set out to ask. While training scientists to interact with the media can aid in the effort to disseminate information, the mere existence of the ad campaign complicates the issues of scientific debate and paid science.

Scientists receiving training from an industry-financed media consultant are widely perceived as "proponents of the Yucca Mountain site." Steve Frishman commented that one primary investigator received "training from the Oram crowd. He is doing good science, but advocating something way bigger. It leads many to worry about the extent to which he is

thinking about asking the right questions. It makes you wonder how good his science is because he has become an advocate of more than he knows as a scientist."

Senator O'Donnell generally supported the training sessions. "What scientists are trying to do is learn how to communicate with the public," he said. "There has to be *some sort of* dialogue with scientists to teach them how to communicate. Teaching communication skills is not a sin. If the public knows more about the issues, they can make a rational decision. Opponents would rather keep them in the dark so they don't know what the truth is." But he warned, "the minute ANEC steps up its ad campaign, [Senator] Dick Bryan will do whatever he can to counter it. The industry ought to just keep quiet. ...We don't need any more advertising--right now, Congress and the feds are the bad guys."

But several Nevada officials saw the campaign differently. Bob Loux told us, "the ad campaign has greatly contributed to this lack of trust [of the DOE]. It has become part of the problem, contributing to it rather than solving it." Gov. Sawyer generally agreed with that position: "When state scientists take one position and DOE scientists take the other, you have to ask whose paying them. Are these scientists objective and non-political? No, they're part of the political team. You have scientists here being trained by public relations people. Why? Is DOE paying them at the time they're attending these sessions conducted by the industry?"

The jury is still out on the impact of the industry's advertising campaign. There is evidence it has successfully corrected misperceptions among the public--such as the idea that the waste going to Yucca Mountain is liquid and potentially explosive. But it would be hard to deny the campaign will complicate the issues when disagreements arise.

Important lessons can be learned from each of these examples. Perhaps the most interesting guidance for people involved in programs designed to build public trust and confidence can be drawn from the Illinois experience. Despite strong initial public support, and an open, contentious scientific debate which most people involved agree has legitimized the siting process, there is no guarantee the proposed Martinsville site will be accepted. In fact, judging by the siting commission chairman's remarks about the IDNS siting process, it appears the commission is at the very least skeptical about the suitability of the site. The final decision on the Martinsville site will provide important insight into the ultimate impact of scientific disagreements on the success of radwaste disposal facility siting efforts. That decision is expected in June.