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Building and Breaking a Bridge of Trust in a Superfund Site Remediation

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Abstract

Trust is widely recognized as a key variable in perceptions and decision making about environmental risks. However, most considerations of trust treat it as a simple two-agent relationship. Based on an analysis of a contaminated site cleanup in New Jersey, we identify a more complex construction of trust formed between multiple stakeholders. We refer to this construction as “bridging”. In the case study presented, two distrusting stakeholders were able to achieve cooperation through moderate links of trust with two intermediaries. We then show how this bridge of trust can be broken by the formation of too much trust, as the intermediaries come to be seen by one distrusting stakeholder as co-opted by the other.

Keywords

trust, hazardous waste site, Superfund, public participation

Introduction

Trust has become a central concept in environmental and risk management controversies. The initial view that conflict was a result of differing understandings of the facts by laypeople led to much research on risk perception and communication (Fischhoff, 1998 [1995]; Slovic, 2000). The mixed success of these explanations and strategies motivated a search for a social explanation. Perhaps the most influential concept drawn on in this stream of research is that of trust (Kasperson, Golding and Tuler, 1992; Cvetkovich and Löfstedt, 1999b). An emerging consensus holds that people oppose risk management decisions not just on the basis of risk or technical merit but rather when they do not trust those who have decision-making power and conversely, they accept them when they do trust decision makers. Thus, for example, widespread trust of doctors and distrust of the energy industry

and the Department of Energy explains the public's acceptance of X-rays and opposition to nuclear power (Slovic, Flynn, and Layman, 1991).

In the trust literature (e.g. Cvetkovich and Löfstedt, 1999b), trust is typically conceived of as a two-agent relationship between a risk bearer and a powerful decision maker. While this single dimensional model is useful, it does not address circumstances found in many public discourses concerning risk management decision-making. For these situations, we must expand our understanding of trust to cover more complex cases in which multiple stakeholder interactions and relationships exist. In this paper, we present an analysis of a contaminated site remediation controversy that illustrates the importance of trust, and in particular, the chains of trust linking multiple actors. This case study suggests that building a "bridge" of partially trusting relationships from a risk manager via several intermediaries to the risk bearing public can overcome strong distrust between those two endpoint actors.

This paper is based on research done at a Superfund site in New Jersey during the course of 2004. That study examined methods for getting feedback on the United States Environmental Protection Agency's (EPA) community involvement efforts at the site. The design of the original study was aimed at testing the relative merits of three tools – focus groups, Q method (a card sorting exercise, see Brown, 1980 for more information), and written surveys – for examining the views of stakeholders about the community involvement process. The analysis in this paper is based on observations about the role of trust that emerged as a by-product of our investigation of the site's community involvement process. Because these ideas were not part of the original study design, we did not formally test them. Rather, this paper represents a qualitative case study of the role of trust in site remediation decision making using primarily data from three focus groups comprised of the "informed public," "officials," and "general public"; 11 background interviews with key stakeholders; and a review of local newspaper reports that were done to develop the focus group discussion guide and the statements for the Q sorts.

Literature Review

Trust is the expectation that the trustee will make and carry out decisions that are acceptable to the truster. Trust serves several functions. First, it reduces the perceived complexity of society by ruling out some

possible actions on the part of the trustee. Second, it transfers power to the trustee, increasing the freedom of the trustee to act without scrutiny, second-guessing, and resistance while increasing the freedom of the truster who no longer has to invest time and resources in scrutiny, second-guessing, and resistance (Barber, 1983; Cvetkovich and Löfstedt, 1999a).

It is not surprising, then, that most of the discussion of trust focuses on its beneficial aspects. Trust has been shown to lead to lower perceived risk and higher perceived benefits from risky activities and technologies (Cvetkovich and Winter, 2001). Powerful decision makers, such as corporations and government agencies, hope that increased trust on the part of the public will make it easier for them to move forward with their risk management plans.

Social scientists have devoted a great deal of effort to understanding the factors that shape the building of trust, in the hope that decision makers will thereby be able to earn the public's trust. The basic model comes from Petty and Cacciopo (1986), who argue that trust can be established along either a "central" route of consciously evaluating the trustee's trustworthiness, or along a "peripheral" route of responding to various cues about the trustee. Much attention has been given to the criteria by which people make a "central" judgment of trust. This attention has given rise to a plethora of different, and varyingly compatible, sets of trust dimensions: competence and fiduciary responsibility (Barber, 1983); competence, objectivity, fairness, consistency, and faith (Renn and Levine, 1991); commitment, competence, caring, and predictability (Kasperson, Golding, and Tuler, 1992); knowledge and accountability and vested interest (Frewer, Howard, Hedderley, and Shepherd, 1996); commitment, caring, knowledge and honesty (Peters, Covello and McCallum 1997); a strong affective factor (composed of highly correlated judgments of openness, reliability, honesty, credibility, fairness, and caring) and a weaker competence factor (Metlay, 1999); commitment, competence, caring, predictability, and openness (Tuler 2002); general trust and skepticism (Poortinga and Pidgeon 2003); and expertise and trustworthiness (Frewer, Scholderer, and Bredahl, 2003).

In recent years the "affective turn" in the social psychology of risk -- which de-emphasizes cognitive and rational processes -- has led to a rise in attention to "peripheral" trust-building. The key figures in the trust field are Timothy Earle and George Cvetkovich, who contend that trust is based on

shared values between the truster and trustee (Earle and Cvetkovich, 1995; Cvetkovich and Winter, 2001).

Whatever the causes of trust, and company or agency wishing to gain public trust has its work cut out for it. The modern public in the United States is widely believed to have historically low levels of trust in institutions (Lipset and Schneider, 1987; Putnam, 1995), though the drop has stabilized and the common use of the 1960s (when the first polls on the issue were done) as a baseline has been disputed (Putnam, 2000). Further, research has empirically validated of the common sense notion that trust is much easier to destroy than to build (Slovic, 1998 [1993], White and Eiser, 2005). This is often referred to as the asymmetry principle. If individuals do not trust an organization, negative stories associated with that organization will reinforce the distrust. Conversely, if an organization is trusted, positive information serves to reinforce the trust and negative information is discounted (Cvetkovich et. al., 2002; though note that White and Eiser, 2006 find that the degree of asymmetry is affected by factors such as the trustee's openness). Trust is thus not a silver bullet, but rather a relationship that must be built over a long time, requiring potential trustees to waive many of their prerogatives through acknowledging the legitimacy of trusters' power and concerns (Kasperson, Golding, and Tuler, 1992).

In most of the literature, trust is typically conceptualized as a two-agent, and usually one-way, phenomenon. The trusting relationship is conceived of as a single risk-bearing truster and a single decision making trustee. Fukuyama (1995), for example, sees trust as either limited to those close to the truster (in which case trust-dependent relationships with those beyond the family are impossible), or generalized and extending to all members of the society. Putnam (1995) goes so far as to treat trust as more a characteristic of an individual truster than a characteristic of a relationship. Coleman (1990) gives some attention to transfers of trust, though he emphasizes the limited fungibility of trust (in contrast to the total fungibility of money). Earle and Cvetkovich (1995) do point out that within-group trust may create between-group distrust, but they do not expand upon this idea. Johnson (1999) is nearly alone pointing out that trust has to be understood with reference to a whole multi-actor hazard management system, though even

he suggests that an overall judgment of trust in the system may be more important than the trust in particular actors within the system.

The multi-agent lacuna in trust research raises the possibility that an *institutional* solution may be found to the problems posed by public distrust. That is, considering the relationships of a whole constellation of actors may make the trust problem more tractable than when it is approached in terms of just two opposing and distrustful parties. Such a solution becomes apparent in an examination of the remediation of a contaminated site in New Jersey. Along the way, we can see the role played by both “central” factors such as openness and fairness, the “peripheral” factor of value similarity in creating trust.

The Case Study

This paper is based on a case study of a contaminated site in the state of New Jersey, in the eastern USA. From the 1950s to the 1990s, a chemical company manufactured dyes, resins, and other products at the site, disposing of wastes in several lagoons and basins, as well as burying tens of thousands of drums of toxic wastes on the site and in a lined landfill. These areas contain volatile organic compounds (VOCs) including chlorobenzene and trichloroethylene (TCE). Over time, the contamination has leached into groundwater that was used by the local municipal water system and private wells in neighboring developments.

In the early 1980s, the site was placed on the Federal National Priority List, meaning that its remediation would be overseen by the federal Environmental Protection Agency (EPA) under the auspices of the “Superfund” program. To facilitate site investigation and remediation, the site was divided into two Operable Units: OU1 is the groundwater, and OU2 is the soil contamination. OU1 was addressed by closing nearby potable wells and constructing a pump-and-treat plant on the site that discharges treated water back to the aquifer. The pump-and-treat operation began in 1996 and is still ongoing. OU2 is being addressed by excavation and off-site disposal of the drums, capping some source areas, and treating contaminated soil via a bioremediation process in which microbes break down pollutants. Bioremediation and drum removal began in 2003, and drum removal was completed in 2004. The 30,000 drums in the lined landfill will remain on site,

because the landfill is permitted by the New Jersey Department of Environmental Protection. The remediation of the site is being carried out by the company, with EPA oversight. The company is providing the funding and technical expertise for the project.

The Superfund process calls for community involvement. At this site, community involvement has been significant, and community concerns have often resulted in changes to the remediation process. For example, the decision to discharge treated water to groundwater, rather than to the river or to the ocean, was a result of public objections to the latter two proposals. In the case of OU2, intense public opposition led EPA to scrap consideration of so-called thermal treatment¹ in favor of a new bioremediation process. In 2003, the town filed a lawsuit to have the drums in the permitted landfill removed along with the drums from the non-landfill areas.

The “Bridging” Construction of Trust

This case illustrates a “bridging” construction of trust. Rather than direct trust between the risk bearer (the general public) and the risk manager (the company), we see a bridge formed over time by the development of trusting links with two intermediaries: EPA and community activists. Each of these links is formed of substantial, but not complete, mutual trust. Strengthening any of these links too much has the potential to place a strain on and ultimately break the other links, as an agent loses its perceived independence and hence its value as an intermediary. At the site under study, the process of trust breaking was evidenced as increased trust formed between the company, EPA, and the older activists, appearing to result in a loss of trust between those activists and segments of the general public. This disruption in one side of the trust bond also resulted in a weaker link between the general public and EPA. More specifically, over time and with the discovery of a cancer cluster, new members of the public became engaged who did not have the trust relationship formed with the old intermediaries. The lack of a trust bridge led to the formation of new activist groups distrustful of the company, EPA, and the older activists; as well as intervention by local government

1980-1996: Building the bridge

When the site was listed on the National Priority List, deep distrust existed between the company and its neighbors. As one interviewee put it, “if [the company] said the sun was shining, and it was, [the public] would say ‘no it’s not. I don’t believe it.’”

In the decades prior to the site’s listing, numerous suburban housing developments had been built in the woods surrounding the plant’s fence line. Home buyers were drawn to his area by its quiet and natural setting, seemingly a pleasant environment in which to live and raise a family. They were later disturbed to learn, then, that their health was at risk from contaminated groundwater. As one person said, “what happened was, when we moved here we were aware that the company was there, and like everybody else assumed that they were properly regulated.”

The individual interviews and focus groups produced a number of comments regarding concern over historic practices at the site that gradually came to light. Former employees told of irresponsible waste disposal practices on the site. People living near the site indicated they were exposed to odors, which were later determined to be phosgene, a.k.a. mustard gas. What’s more, the company’s use of phosgene was believed to be in violation of its legal permits.

Public distrust of the company was especially deep-rooted because it was perceived to be acting on the profit motive. Some individuals argued that being trustworthy would require the company to fight against its basic corporate structure – a quite unlikely proposition. On the other hand, the profit motive would later be occasionally cited as a trust-improving measure. Several interviewees said that the fact that the company is able to make money off the remediation technologies pioneered at the site gives them confidence in the reliability of those technologies.

As we were unable to interview any individuals who had been representatives of the company in the early 1980s, we cannot say for sure what the company’s attitude toward the general public was at the outset. Nevertheless, the company’s initial unwillingness to share information with other stakeholders (as described to us by other interviewees and focus group participants) would seem to be consistent with a lack of trust.

EPA was also not particularly trusted by the community. The perceived slowness of EPA’s action to clean up the site, combined with a lack

of other interaction with EPA, left members of the community with little to base trust on. Early in the process, there were also allegations that EPA officials had received gifts from the company at a fund raising event. Thus distrust of the company bled over into the perception of EPA insofar as EPA was seen to lack independence. This point was further exacerbated by the EPA's handling of a nearby Superfund site that also had prompted health concerns.

A fourth actor entered the stage in 1984 when an effluent pipeline from the plant to the ocean burst. This graphic illustration of the danger posed by the site motivated some citizens to form an activist group aimed at pushing for cleanup of the site.

At its peak, this group's membership reached 500 people. Because of its grassroots origins, its leadership, and its wide membership, this first activist group benefited from the trust of non-activist neighbors. One interviewee told us "there was trust, more trust in those leaders [...] than there was in the municipal government, that's for sure." Personal familiarity with the group's leadership could be especially useful: "A matter of fact, the only criticism I've ever heard of [the older activist group], is the fact that [the company] funds the testing that they [did] – and if I didn't know the people who were involved, [...] I might be concerned. But these guys are above reproach when it comes to stuff like that."

While the relationship between the EPA and the company was initially strained, over time trust was formed. As the Potentially Responsible Party (PRP), the company provided the funding and had much relevant technical expertise on hand. By having the company handle the cleanup directly, numerous bureaucratic hurdles could be avoided. EPA did not originally have a strongly trusting relationship with the company. Subsequent to the company's decision to close down its manufacturing operations at the site, that relationship substantially improved. .

While the goals of each organization may have been competing, EPA and company staff shared with each other a technical-scientific-managerial culture. EPA staff had a scientific background that allowed them to speak the company technicians' language and communicate on the level of scientific problem-solving.

The difficulty of generating trust between the public or activists and the company made EPA's role as a possible bridge or intermediary important. The company recognized the importance of this link – as one interviewee put it, “when things would get hot and heady at these meetings, [the company] tried to let the EPA talk then, because they have some credibility.” Trust between EPA and the activist group was also fostered by not allowing *too much* trust to develop between EPA and the company. During the Remedial Investigation for OU1, EPA did parallel studies to double-check the company's work. The parallel studies allowed EPA to demonstrate that it was keeping a close eye on the company. The public had extensive access to these studies, including in draft form, and this helped to convince them that EPA and the company were not trying to hide anything. Asked how EPA won her trust, one interviewee said “because along the way they felt the same thing that we felt, that we weren't getting enough information [from the company], and they tried.”

A similar mechanism allowed the original activist group to build trust of EPA and the company. The group received a grant – initially from EPA, and later from the company – that it used to hire an independent technical consultant. This consultant conducted tests to double-check EPA and the company's scientific claims.

One trust-building mechanism that many interviewees and focus group participants noted was EPA's decision to open its technical review meetings to public observation. Technical review meetings were meetings in which EPA and company scientists discussed technical aspects of the cleanup. At these meetings, the comparatively united front presented by EPA and the company in regular public meetings was relaxed and experts from the two organizations would challenge each other's claims. By allowing activists to observe these discussions, EPA demonstrated its effectiveness as a watchdog. The activists could see that EPA was not merely accepting the company's decisions and findings, but thinking critically about them and refusing to accept bad science.

Over time, the activist group was able to act as a liaison to the wider public. If a concern was raised at a public meeting about a proposal, an activist could defuse the situation by getting up and vouching for the quality of the analysis. As one interviewee described it, several activist leaders:

... got up at a public meeting where ... EPA was getting a lot of controversy, and he talked about the schedule slippage, and both of them said 'we've been at these meetings, we see what they do, and you should give them the time to do it if you want it done right.' And the meeting went from complaining about the schedule change, to back to what we were talking about technically (snaps fingers) in an instant, like that.

But just as EPA scientists challenged the company in the technical review meetings, the activist group was quick to challenge EPA at the public meetings, thus demonstrating to the public its credibility as a watchdog.

EPA also won public trust by making efforts to listen to the public's concerns even when they seemed technically incorrect or off-topic. They recognized that the public has different constraints on its time and ability to slog through technical reports. As one interviewee put it, "the citizens don't get paid for this. They have a normal life that they lead, and then you put on all this extra time to find this enormous challenge, and so you have to respect that you can't drop a report on them and say 'you've got a week to get back to ...' – you know, because they've got other things going on in their life."

EPA, for its part, came to view the activist group as a legitimate stakeholder. Key to this was a perception that the activist group was "reasonable." The scientific backgrounds of many activist leaders, combined with their use of a technical consultant, meant that they could speak the same sort of technical language as EPA. While dogged in their pursuit of a satisfactory reduction of risk, they eschewed emotional tactics for scientific analysis and a solution-finding orientation.

Figure 1 illustrates the completed bridge of trust as it existed at this point in the remediation process.

The decision-making phase for OU1 benefited from these links of trust. The remedy for the contaminated groundwater consisted of a pump-and-treat plant that would draw the water out of the aquifer, remove the contaminants, and discharge the water. Initially, EPA proposed to discharge the treated water through the company's old effluent pipe to the ocean. This solution was not acceptable to the public, because of a combination of the stigma associated with the pipeline since the '84 bursting, and concern over alterations to the hydrology of the river. Instead, the decision was made to

discharge the groundwater into the river. This solution, however, raised concerns from the general public. The activist group, EPA, and the company saw this public concern as somewhat irrational, given their faith in the pump-and-treat design that they had worked together on. But rather than dismiss the public's concerns, the other actors turned to a third alternative, recharging the treated water back into the aquifer.

The outcry over the river discharge came after that remedy was officially written into the Record of Decision (ROD) for the site (the ROD is the EPA document that describes and documents the basis for decision making at the site). Because of the trust that had been built up, EPA and the community were able to negotiate an acceptable solution and craft an "Explanation of Significant Differences" to alter the remedy without going back to square one of the ROD process.

As the major decisions on OU1 were finalized, trust became more established between the various stakeholder groups. Scrutiny from the older activists had motivated and validated EPA's trustworthiness, and likewise EPA scrutiny appeared to have increased the company's trustworthiness. Even when established, however, bonds of trust can be fragile, and changes in the levels of trust between actors continued. Public meetings, which had begun as EPA-run affairs, became joint EPA-company projects. At the same time, some trust between the older activists and the company began.. With the early acrimonious relationship between the public and the company as a frame of reference, the company's newer managers seemed quite open and cooperative. And like EPA, the company came to appreciate the technical focus of the original activists, even when they disagreed on the conclusions.

Meanwhile, the wider public began to fade from the scene. Without controversy to motivate them, people's focus was taken up elsewhere. As one interviewee said, "I think what's happened with community involvement is that now that all the screaming and shouting and – is all taken care of, and the cleanup is happening, the community is no longer interested. It's not news." One focus group participant described how a particularly upset citizen "quit coming [to public meetings] because he built the trust that we were – he decided that 'hey, I don't need to be so worried about this stuff. It's not the priority that I thought it was'" Similarly, continued good results from the independent consultant's analysis were uninteresting to the local press.

As the wider public faded from the scene, the remaining actors began to rely on the original activist group as a surrogate for the public. Public trust of the group made it seem like a legitimate representative of community interests, and that perception persisted even as the general public came to pay less attention to the site. A close working relationship grew up between the company, EPA, and the original activists. The company and EPA consulted the activists directly about alterations to the remediation plan, such as changing the frequency of water testing.

1996-2004: The bridge broken

The fragility and relational aspects of trust can be seen in what occurred over time. While initially the citizen activists groups were the key trusted link between the general public the company and EPA, over time this link seemed to weaken. The shift was exacerbated by two developments. One was demographic. As time passed, trust-building events during the Remedial Investigation for OU1 faded into the background. Some interviewees explained that many of the early participants had been elderly, and so as time went on some of them passed away. The original activist group's membership dwindled to around 5. Meanwhile, the population of the region boomed. The Jersey shore is an attractive bit of real estate, and the easy access from the Garden State Parkway made the area around the site very appealing. The population of the municipalities neighboring the site grew by 50% between 1980 and 2000 (U.S. Census Bureau 2004). These new residents were in some ways like the people who had moved to the developments near the site prior to the 1980s – they moved in with little knowledge of the health hazards, expecting to live in a pleasant suburban environment.

The second development that made an issue of the weak trust between the original activist group and the wider community was the discovery of a childhood cancer cluster in the area. Concern came to a head in March 1996, when the New Jersey Department of Health and Senior Services and the federal Agency for Toxic Substances and Disease Registry released the results of a study partially confirming the elevated cancer levels that had been documented through lay epidemiology. The study found that past contamination at the site could be responsible.

Two new community activist groups formed in the mid 1990s. Both were made up of individuals affected and motivated by the cancer issue.

Both of these groups began with strong distrust of the company, EPA, and the older activist group. Coming onto the scene only after learning of the hazards affecting children, they saw a group of actors who had failed to protect some of the most vulnerable members of the community. The prevailing feeling at the 1996 cancer meeting was, in the words of one interviewee, “that this has been going on for years, they’ve made promises to take care of it, and children are still dying. Now until the government came in here and found out what the problem was and fixed it, that we would not trust them again.”

As the party responsible for creating the contamination, the company received a great deal of active distrust from the new activists and the sector of the public they represented. These more newly involved individuals were unhappy about substantial role in the cleanup that the company had been granted following the trust-building activities surrounding OU1 – as one focus group participant put it, “it’s still a complete turnoff that [the company] hires the people who clean up the site.” Distrust made these activists quick to see instances of malfeasance. One person pointed out a clear contrast in the level of openness exhibited by the company responsible for another local Superfund site (which was also a suspected cause of the cancer cluster) versus this site’s company when representatives of the two companies appeared at meetings – a contrast not favorable to the company from our site.

EPA likewise was seen by some of the new activists as exhibiting incompetence and a lack of concern. Interviewees cited the failed cleanup of other sites as evidence of EPA’s poor record. One focus group participant expressed a difficulty in trusting that EPA was following its own remediation plans, since no progress updates had been given to the public for quite some time.

In an interesting contrast to the trust-building release of draft reports during the OU1 studies, EPA refused community requests for real-time (rather than 24-hour delayed) publication of OU2 air monitoring results on their website. While EPA argued that this was necessary to keep temporary spikes – caused, for example, by a truck passing – from causing concern, less trusting

activists and members of the public wondered whether EPA was using the delay to meddle with the data, and hence they become even less trusting.

The newer activists' trust in EPA and the original activists may also have been impacted by the perceived relationships and closeness EPA and the original activists had with the company. What to EPA and the older activists seemed like a good working relationship and trusting use of the company's expertise, the newer activists and public saw as a lack of independence. Rather than a regulator pushing the company to effectively clean up the site, EPA was seen as deferring to a company that had no reason to do a good job. One focus group participant said:

I think what disturbed me was, you know, the first couple of meetings that I attended, was that [an EPA representative] would always look at the representative from the [the company].

This came across to as a need for EPA to have company confirmation or permission.

The original activist group, meanwhile, was viewed as having been co-opted by the company and EPA, ceasing to be an independent watchdog. Since the money for their technical consultant comes from the company, the older activist group also was thought to have a conflict of interest. One interviewee described this group as the "fox watching the henhouse."

These newer activists and citizens showed little interest in building trust. Their strategy was to demand openness and constant careful scrutiny, to keep the company and EPA on the straight and narrow. Second, they wanted community input into decisions to make sure community preferences are respected, and because the community may have ideas that EPA and the company wouldn't have thought of – a move that would reduce the need for trust by reducing the scope of the trustee's authority. And third, they wanted to eliminate the closeness between EPA and the company that they believe compromises EPA's ability to act as a skeptical watchdog. Earle and Cvetkovich (1995) point out that this is a lot of work, but some activists are willing to put in this work because the stakes (the lives of children) are so high and the likelihood of discovering that EPA or the company is trustworthy is perceived to be so low.

Figure 2 gives a graphical presentation of the trust situation surrounding the site at the time of our research. It is important to point out that the lines are approximations based on a very limited number of interviews and the figure itself has not been validated by the interviewees. However, there is substantial data in our transcripts to support these assessments of trust among these groups.

The contrasting actions and perceptions of the two activist groups during the decision making for OU2 illustrate the difference that trust makes. EPA's initial proposal for soil remediation was to use thermal treatment. Following a public outcry, the preferred remedy was changed to bioremediation, a process in which microbes are used to break down the contaminants.

One focus group participant put the trusting perspective on OU2 like this: "bioremediation was – it'll work, it's not exactly what the community said would be the ideal situation for them, it's not exactly what from a technical standpoint [EPA was] talking about. But that's what I think the trust results in, is this idea that we can both come to a solution that, it's acceptable." The original activist group opposed thermal treatment and was not prepared to let EPA implement it, demonstrating that they were independent of EPA. Nevertheless, rather than attack the agency or the proposed solution, they offered an alternative plan: bioremediation of the contaminated soil. Their orientation was that EPA could be trusted to consider remedies on the technical merits. They noted how criticism of the effectiveness of thermal treatment combined with a proposal for a satisfactory alternative led to change in the plan.

At the same time, the original activists (and to some extent the wider public) cultivated EPA's trust by listening respectfully and attentively to EPA's argument for incineration. One person noted, "I remember the public sitting there, listening very intently, asking good questions, and at the end of the session they said 'no. We appreciate the presentation, we just don't want incineration.'" Thus, EPA was presented with individuals who had given consideration to thermal treatment but decided against it. The company trust in EPA and the original activists helped to make it willing to invest a million dollars in testing the bioremediation idea (bioremediation had been used before, but never on a site of this complexity). Thus, from the perspective of

the older activists, EPA, and the company, the remedy chosen for OU2 was the result of trust-based cooperation.

In contrast, the newer activists saw the OU2 process as a constant, an struggle. EPA could not be trusted to do the right thing without pressure from the public, and sometimes not even then. This group may also have distrusted the way science was used in support of the preferred alternative as cover for a lack of fiduciary responsibility. So while the newer activists also listened carefully to EPA's analysis and argued against it on technical grounds, they kept other strategies at their disposal as well. This was illustrated in the design of the air monitoring system at the site during the work on OU2. EPA initially proposed to use a roving air monitor, which would be moved to different locations depending on the wind. The newer activists responded with a strategy of public ridicule, featuring a mocking cartoon on one group's website.

For some members of the general public, the link of trust to activist groups remains strong. One focus group participant told us "I think people tend to just accept the fact that 'OK, there's groups out there that are helping us and they are taking care of it.' And they, they don't even think to, to worry about it." Yet even the newer activists are unable to act as full representatives of the community. Their existence is relatively unknown to many citizens, including those who have come to some public meetings. In our focus group of people who were on the EPA mailing list for the site but who had not taken an activist or leadership role, nobody could name any of those three community organizations, aside from one person who made a reference mixing up the names and attributes of two different activist groups.

Many members of the public, therefore, lack a liaison between themselves and EPA that can act as a sort of trust bridge. In the general public focus group, participants expressed interest in the formation of a Community Advisory Group that would fill this role of intermediary.

In lieu of trust in watchdog groups, some members of the community have turned to the law to advance their interests. As one focus group participant put it, "to get anything done you gotta reach the politicians and put their jobs on the line. They will then get the – if they feel that EPA has been false ... the only ones that can correct that is the politicians." Two groups of cancer-affected families filed class-action lawsuits against the company in

2000. Neither of the newer activist groups were involved in these suits, arguing that it would disrupt the fragile information-sharing relationship they had managed to establish with the company.

In 2003, the town sued the company to have the drums removed from the on-site landfill. This suit has substantial public support, which explains why the local government was finally willing to wade into the site controversy. The controversy over the drums illustrates the gap between the older and newer activists. The older activists agree with EPA's stance that the landfill is a separate issue, given the legal distinction between a state permitted facility and a Superfund site. To them, insisting on removing the drums from the landfill is a distraction from the real issue of cleaning up the Superfund site. On the other hand, the newer activists view the landfill as a continuing hazard to their health. Unwillingness to clean up the drums bespeaks an unwillingness to care for the health of local residents. As one focus group participant put it:

I said "out of the goodness of your heart, why don't you clean up the remaining drums?" They told me it would open Pandora's Box. And I said "what do you mean, you have to clean them all up all over the water – all over our waters – over the entire" – And they said "yes, and it would" – and I said "well, you can start here."

Nevertheless, some pro-removal individuals have attempted to speak what they see as EPA's language – one interviewee said, "As long as you've got all the stuff you need there, why not just take the other barrels out at the same time? You know, kill two birds with one stone. It would be cost, cost-efficient."

Conclusion

Contrary to the view that once distrust exists it cannot be repaired, our case study site saw the creation of a trusting framework that overcame deep distrust between the community and the company. Yet contrary to hopes for a magic bullet to resolve risk conflicts, the building of trust took a decade and required great sacrifices of time, resources, and power by all actors. Perceived openness on the part of prospective trustees was a critical factor enabling this trust-building (see also Tuler, 2002; White and Eiser, 2006).

This case study illustrates some of the promise and pitfalls of building trust among multiple actors. Two distrustful actors can be linked by relationships of moderate trust with one or more intermediaries. However, if one of those links becomes too strong, the intermediary loses its perceived independence, thus disrupting the other link. A careful balance must be maintained in each relationship to maintain multiple relationships of trust among varying stakeholders. If achieved, such multi-actor trust can get around seemingly intractable distrust. The consequences of trust and distrust, as well as of trust-building activities, for the progress of the remediation are clearly visible in the history of the site.

This case study highlights four factors which have been previously discussed in the literature as key influences on the formation (or lack thereof) of trust: verification, openness, vested interests, and cultural similarity. These factors are here listed in rough order of their cognitive demand (Earle and Cvetkovich, 1995) or centrality-peripherality (Petty and Cacioppo, 1986), as well as their temporal sequence. Verification consists of the ability of the prospective trustor to directly check on the prospective trustee's actions, a laborious procedure that initially serves as a substitute for trust but – if successful – leads to the formation of trust. The independent technical consultant hired by the older activists is a clear example of this. Openness is shown to be critical in the initial stages of trust-building, in order to enable the prospective trustor to verify the actions of the prospective trustee. Such actions include not only decisions about the substantive issue, but also the trustee's relationships and degree of trust with other actors. Vested interests play a role in identifying motivations that could lead a trustee to perform certain actions – note, for example, the role that the profit motive played with respect to different actions by the company. Vested interests also help to explain how too-close trust between two actors can erode trust of those actors by a third party. Finally, cultural similarity does more than simply identify the trustee as “one of us.” Cultural similarity underlies a shared framing of the issue and an ability to communicate easily about it.

Earle (2004) argues that to create trust in an risk decision context, it is necessary for all stakeholders to see themselves as part of one large group with a shared set of values. In the context of a risk controversy with entrenched interests and a limited time frame, such a prospect would be exceedingly

difficult. Luckily, there is another possibility. By using a set of intermediaries intense distrust can be bridged in a way that allows decision making and implementation to go forward.

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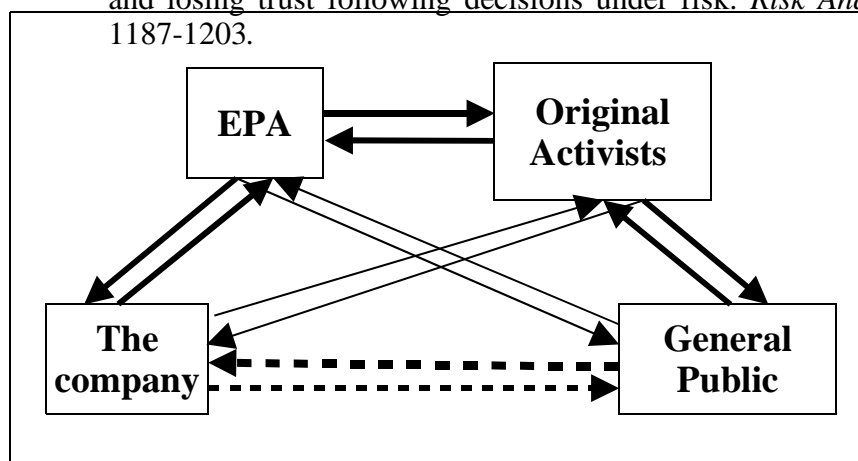


Figure 1: Trust during OU1. Width of arrow indicates intensity, dashed lines indicate distrust. The distrustful relationship between the company and the general public is bridged by moderately trusting relationships with EPA and the original activists.

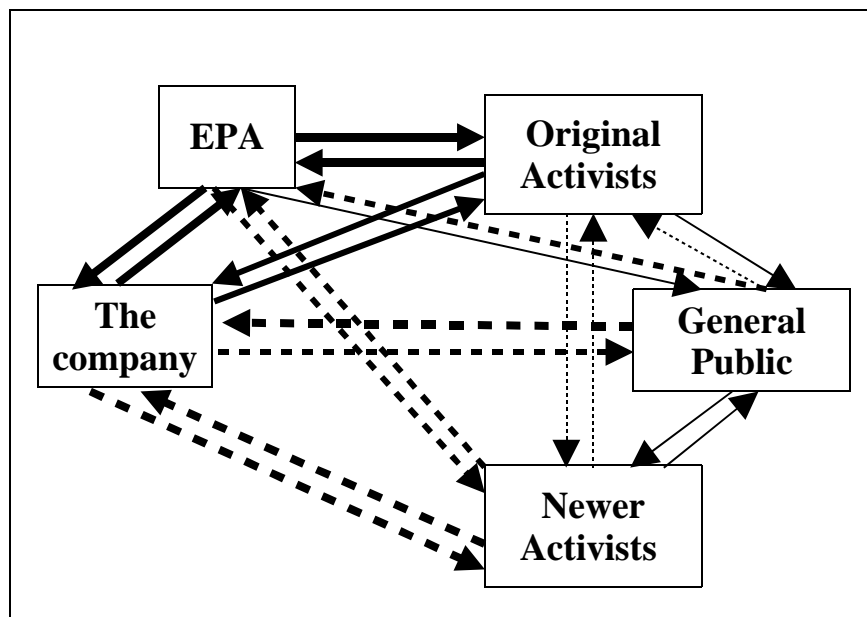


Figure 2: Trust during OU2. Width of arrow indicates intensity, dashed lines indicate distrust. The company, EPA, and the activists have formed a close bond, with distrustful relations to the other actors.

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¹ There is some dispute at the site as to whether the “thermal treatment” proposed for the site is the same as “incineration.” EPA maintains that there is a technical distinction between the two processes. Most members of the public use the term “incineration,” believing “thermal treatment” to be merely a euphemism.