

Framing Contests in Environmental Decision-making: A Case Study of the Tar Creek (Oklahoma) Superfund Site

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Abstract: Problem statement: Stakeholder involvement processes have become an important component of environmental decision-making. This study investigated the role that stakeholders operating outside of official stakeholder processes may play in influencing the policy environment. An improved understanding of the public and political influences on environmental policy decisions contributes to the development of more effective and legitimate policies. **Approach:** We utilized frame analysis to reveal the emergence and communication of competing narratives (problem and solution frames) among citizen groups at the Tar Creek Superfund Site and how these frames influenced the political dialogue surrounding remediation decisions at the site. The data used in the analysis was drawn from extensive fieldwork in the Tar Creek communities, document analysis and in-depth interviews with 53 individual stakeholders. **Results:** Three competing frames were articulated and advanced by three groups of Tar Creek residents. We demonstrate that each of the three groups altered the policy debate and influenced the actions of politicians, which in turn impacted remediation policy decisions. Evidence suggests that all three groups were able to significantly affect policy decisions, although the magnitude of their influence differed. **Conclusion/Recommendations:** The results showed that public framing may play a critical role in influencing environmental policy decisions. Understanding how stakeholder framing can impact the overall context of environmental decisions will allow policymakers to better respond to stakeholder concerns in a way that benefits the policy making process as well as policy outcomes.

Key words: Framing contests, stakeholder participation, environmental decision-making, policy process, superfund sites

INTRODUCTION

Sustainability requires that the recursive relationship between the natural environment and human enterprises be brought into an enduring and adaptive balance. The involvement of public stakeholders in environmental decision-making processes is widely recognized as an important component for achieving this balance. In 1996, the National Research Council advocated a new approach to evaluating environmental risks that includes the involvement of public stakeholders in an iterative analytic-deliberative process to frame analyses and deliberate appropriate courses of action^[35]. Stakeholder involvement has steadily increased at all levels of government and there is compelling evidence to suggest stakeholder processes that address the political

dimensions of environmental issues result in improved decision outcomes^[8]. Public participation is also a requirement for governmental policies to be politically legitimate as well as effective^[37].

The types of processes in which stakeholders participate in environmental decision-making vary widely, from public meetings to intensive negotiations. In this study, we describe how stakeholders also influence policy decisions outside of these formal processes by publicly elucidating and advocating different problem and solution frames. We argue that these stakeholder groups compete in framing contests to win public support and influence politicians and others in positions of authority.

Using the example of the controversy surrounding remediation decisions at the Tar Creek Superfund Site in northeastern Oklahoma, we identify three competing frames articulated by the residents of communities

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within the site and demonstrate how these frames emerged and became important facets of the remediation policy debate. We demonstrate how a dynamic interaction of mutual influence developed between the frames advanced by the resident stakeholder groups and the actions of politicians. We also assess the relative effectiveness of each frame regarding its ability to win support from the general public, politicians and other influential individuals and how this support influenced policy decisions made by government officials.

We conclude with a discussion of the importance of understanding how framing contests can significantly influence the acceptability, political feasibility and legitimacy of environmental policy decisions.

History of the Tar Creek Superfund Site: The Tar Creek Superfund Site covers approximately 40 square miles in Ottawa County, Oklahoma. Contaminated water originating from the site migrates downstream via two major watersheds to affect a much larger area of the region. Approximately 19,556 people live in and adjacent to the Superfund area, with five municipalities located within the boundaries of the site^[42]. Two of these towns, Picher and Cardin, are situated in the epicenter of the hazardous area.

While policy decisions concerning Superfund sites are seldom without controversy, few sites in the United States equal the complexity of the Tar Creek Superfund Site. Over the last two decades, the United States Environmental Protection Agency (USEPA), The United States Army Corps of Engineers (USACE), the Bureau of Indian Affairs (BIA), several environmental agencies within the State of Oklahoma and various private organizations together have spent more than \$100 million to reduce human health and safety risks and alleviate environmental degradation.

Prior to 1970, the Tri-State Mining District (northeastern Oklahoma, southwestern Missouri and southeastern Kansas) produced a significant portion of the lead and zinc mined in the United States. A mining boom flourished in the district from 1891 to the late 1960's under the authority of the United States Department of Interior (USDOI). USDOI was engaged through the BIA and the Bureau of Mines in issuing leases to many mining companies that operated in the area.

Over 31 million cubic yards of mining wastes covering a total area of 767.05 acres are present throughout the site, much of it concentrated in large piles up to 200 feet high^[43]. The piles do not support vegetation, giving the area an appearance often described as a moonscape. The mining wastes, locally called chat, contain elevated levels of lead, cadmium and zinc. The chat clogs local streams, causing flooding

problems and windblown dust and rain runoff from the piles spread heavy metal contamination over a wide area. Before its toxicity was recognized, the chat was widely used as gravel for building foundations, roadbeds, parking lots and play areas in parks and playgrounds throughout the area.

Concerns over the health risks and environmental hazards posed by the mining practices in the Tar Creek area began in the 1930's when striking miners suffering from lead and zinc poisoning sought attention for their health problems. The Oklahoma Fish and Game Service filed the first lawsuit against the mining companies in 1934, charging them with destroying the environment by pumping highly acidic water from the mines into the local streams. Various litigation efforts against the companies continued until the mid-1960s, when most of the mining ceased. Over the last few years, former and current area residents and the Quapaw Tribe of Oklahoma (Quapaw Tribe) have filed additional lawsuits against the few mining companies that remain in operation and the federal government.

By early 1970, all mining ceased as other more accessible and profitable mining fields were developed. With mine closure, groundwater pumping designed to keep the mines dry also ceased. By 1979, 300 miles of underground mine tunnels filled with water and began to discharge acid mine water containing dissolved metals into Tar Creek, Lytle Creek and other local tributaries. It is estimated that 76,000 acre-feet of contaminated water has accumulated in the abandoned mines and the Mississippian Boone Formation^[42].

In 1980, then-Governor George Nigh of Oklahoma convened a Tar Creek Task Force comprised of local, state and federal agencies. The Task Force completed their report in 1981 and sent it to the United States Environmental Protection Agency (EPA) for action. The EPA quickly proposed that the site be added to the newly created National Priorities List (NPL) for remediation under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), commonly referred to as the Superfund law. The Tar Creek site was added to the NPL in 1983 and ranked as one of the twenty most hazardous sites in the nation. The site's hazard ranking score (a numerical prioritization system utilized by the EPA) made it number one on the list for many years.

The policy decision environment at Tar Creek is complex and involves multiple state and federal agencies as well as ten American Indian Tribes, including the Quapaw Tribe, which together with individual tribe members, own over 50% of the property located within the Superfund site. The Quapaw also claim ownership of the majority of the chat, which they say was promised to them by the federal government and they view as worth millions of dollars

as roadbed material. The situation is further complicated by the fact that the USDOJ is involved in three important ways. USDOJ is a responsible party under CERCLA (Superfund). USDOJ is also the federal Natural Resource Trustee, responsible for accessing and claiming damages from responsible parties for restoration of injured resources. In addition, USDOJ is the trustee for many Indian landowners in the area.

The remediation policy controversy: The controversy surrounding Tar Creek includes conflicts over the risks to human (especially children's) health, threats to ecological species and habitats, the extent and likelihood of abandoned mine tunnel cave-ins, the selection of remediation technologies, declining property values, the assignment of legal responsibilities, payment of remediation costs, compensation for past harms, exercise of rights of local self-determination, community stigmatization, destruction of the local economy and the intentions of outsiders involved in decision-making.

Two events were particularly important in influencing the emergence and advancement of competing residents' problem and solution frames for addressing the risks and other harms. The first was the recommendation of then-Oklahoma Governor Frank Keating's revitalized Tar Creek Task Force in 2000 that a large portion of the impacted area be flooded to create a "world-class" wetlands, a proposal that would have forced the relocation of two towns, Picher and Cardin, located within the site boundaries. The Task Group final report^[25], presented the following vision:

To establish a world-class wetlands area and wildlife refuge within the boundaries of the Tar Creek Superfund Site that will serve as an ecological solution to the majority of the most pressing health, safety, environmental and aesthetic concerns.

This proposal led to the polarization of the residents of Picher and Cardin into opposing groups. One group advocated a federal government buyout to relocate the residents of the towns while the other vehemently opposed such a move. A third stakeholder group comprised of American Indian tribal leaders and members, particularly those of the Quapaw Tribe, were also alarmed by the proposal and how it would impact their lands and financial interests. The proposal galvanized these three groups into elucidating and advocating three different frames identifying the primary problems posed by the site and appropriate courses of action for alleviating the problems.

The second event was the increasing politicization of the environmental issues at Tar Creek and the

resulting intense media coverage that occurred. Governor Keating left office at the end of 2002 after threatening to sue the federal government if immediate action was not taken to address the health, safety and environmental risks posed by the site. After the new Governor of Oklahoma, Brad Henry, took office in January 2003 he issued an ultimatum to the federal government to put forward a serious solution in six months or face a lawsuit. Disagreement surrounding remediation actions at the site led to a face off between two of the legislators representing the citizens of Tar Creek: US Representative Brad Carson, who supported a federal buyout of the towns and US Senator James Inhofe, who insisted a buyout was off the table for discussion. The controversy generated intensive media coverage in local and regional newspapers, as well as prominent stories in major national media sources including National Public Radio^[1], the New York Times^[4] and Time magazine^[27].

The media attention and political contests provided important venues for the three groups to engage in framing contests where they utilized media interviews, public meetings and campaign events as vehicles for advocating their frames in an effort to win public support for the policy actions each group supported.

Framing environmental conflicts: In recent years framing has become a popular and useful analytical tool for examining environmental conflicts^[13,16-18,22,31]. Framing refers to the process that individuals and groups use to shape and organize their perceptions of reality. It allows individuals to make sense of a set of undifferentiated events and define them in terms that are meaningful. According to Gray^[16], framing refers to the process of constructing and representing our interpretations of the world around us.

Frame analysis has been applied to the study of discourses between political and institutional actors in the context of public policy-making^[6,7]. Triandafyllidou and Fotiou^[38] found that the relationship between stakeholders' cognitive-discursive frames and policy actors' opinions is one of interaction and mutual influence. Lewicki, Gray and Elliott^[14] have investigated frame analysis as a tool to analyze environmental conflicts and to facilitate resolution of intractable environmental disputes. Frame analysis offers new insights into social and cultural perspectives in the study of public policy at a time when scholars are seeking to develop models for involving stakeholders in the development of fully legitimized environmental policies^[37].

Frame analysis has also been used widely in the study of collective action^[7,10,33]. Social movement research has highlighted the role of frames as accenting devices that either underscore and embellish the

seriousness and injustice of a social condition, or redefine as unjust and immoral what was previously seen as unfortunate but perhaps tolerable^[34]. Collective action frames aim not only at problem identification but also at attribution of blame or causality. Frames also serve a prognostic function by proposing specific courses of action and identifying strategies for achieving goals. Frames also impact mobilizing potential because they launch a call for action and offer a justifying rationale^[32]. Benford and Snow^[7] identify three core framing tasks that characterize collective action frames: diagnostic framing (problem identification and attribution), prognostic framing (proposed solution) and motivational framing (call to action). Davis and Lewicki^[11] define the framing tasks involved in environmental conflicts as: 1 defining the issues, 2 shaping what action should be taken and by whom, 3 protecting oneself, 4 justifying a stance one is taking on an issue and 5 mobilizing people to take, or refrain from taking, action on issues. Stakeholder groups utilize these tasks to create frames to achieve consensus mobilization and action mobilization^[21]. In environmental cases, frame disputes emerge when there are conflicting definitions of environmental conditions and when there are differences regarding the actions needed to alleviate the problems. When such disputes emerge stakeholder groups engage in a form of competitive framing to gain the upper hand in influencing environmental policy decisions.

Competing groups engage in framing contests to garner political support for their respective campaigns. Their success largely rests on their ability to create effective and credible messages that resonate with their target audiences^[7]. The resonance of a group's message is related to the effectiveness or mobilizing potential of the proffered frame. As a result, a stakeholder group's framing strategy is linked directly to their ability to garner media attention, as well as stimulate public and political support for their campaign.

The resonance of a frame is also closely related to its credibility, which is a function of three factors: frame consistency, empirical credibility and credibility of the frame claims-makers^[7]. Frame consistency refers to the congruency between a social movement's articulated beliefs, claims and actions. Empirical credibility refers to the degree to which the frame being promoted fits with related real world events. Ambiguity is central to environmental disputes^[15,44] and, as a result, the veracity of exposure and illness claims is often contested between multiple stakeholder groups. In the absence of concrete, empirical evidence, groups must stake their claims on both real and assumed problems and they must convince others of their respective positions. The more culturally believable the claimed evidence and the greater the amount of

verifiable proof, the more credible the frame becomes. In environmental disputes cases, for example, scientific risk analyses conducted by respected independent health officials would be expected to bolster the credibility of a resident group's frame.

The third function of frame credibility relates to the integrity of the claims-makers themselves and stakeholder groups employ a number of strategies for enhancing the resonance of their frames. However, two of these approaches are particularly relevant in environmental dispute cases. The first involves the use of the representative anecdote, which is a story that is presented as though it is exemplary of the central unresolved problem^[5]. The anecdote must be complex enough to be representative, but simple enough to reduce the subject to an easily understandable form. Another strategy employed by stakeholder groups is the use of vocabularies of motive^[5,9] that provide compelling accounts that demonstrate the severity and urgency of the situation and explain the efficacy and propriety of their proposed solution.

Competing stakeholder groups often engage in contentious framing battles to discredit their opponents^[28]. In their analysis of environmental disputes, Elliot *et al.*^[15] note that, through the process of framing, they also discarded, devalued, or ignored information that was inconsistent with their chosen frames. In this research we illustrate how three different groups of residents within the towns of Picher and Cardin developed competing frames and engaged in framing contests to influence policy decisions regarding governmental actions at the Tar Creek Superfund Site.

MATERIALS AND METHODS

The data for this project came from fieldwork conducted from 2002-2005. A total of 62 in-depth interviews were conducted with 53 Tar Creek stakeholders, including residents of the four most impacted communities (Picher, Cardin, Commerce and Quapaw), representatives from state and federal agencies involved in decision-making at the site, officials from Tribal Nations whose lands are impacted by contamination from the site, local community officials and members of local activist groups.

In addition, we conducted an extensive review of over 100 newspaper and magazine articles published between December 1999 and August 2007, government records, press releases and other documents released by politicians and additional documents related to the site. Supplemental data was also taken from personal communications and field notes of non-participant observation at public meetings.

A purposeful, naturalist sampling approach^[12] was utilized to interview those with different perspectives to

ensure that a full range of views was obtained. Initial contacts were made with individuals whose names had appeared in newspaper articles about the conflict. Each respondent was asked for references to others who held dissimilar perspectives from their own.

Stakeholders were interviewed in locations where they felt most comfortable, usually in their homes or workplaces. Interviews lasted from 1-3 hrs, depending on the willingness of the respondent to engage in dialogue. The sessions were audiotape recorded with the respondent's permission and later transcribed. The interviews were semi-structured and began with open-ended discussions of daily life and concerns over the Tar Creek Superfund Site. This led to discussions about remediation preferences regarding the future of the site communities and the preferred overall outcome.

RESULTS

The emergence of competing frames: When Governor Keating, a Republican, announced the formation of the second Tar Creek Task Force in January of 2000, he specifically mentioned the threat that the Superfund site posed to Grand Lake, a downstream reservoir that was beginning to show signs of contamination. This and subsequent statements by other government officials indicate that concerns about damage to the economy of the Grand Lake area were the primary motivation for finding a solution to the environmental problems. Governor Keating's statement:

There are still serious health and safety challenges in the northeast corridor of the state, which is home to many wonderful people and to Grand Lake, the site of one of our most significant natural resource treasures.

Grand Lake of the Cherokees is a premiere tourist destination and is surrounded by many upscale residences. It supports a thriving and growing economy centered on the lake and its residents, who include many wealthy individuals. Grand Lake is located in the northeastern corner of Oklahoma and is an integral part of the economy of the region that includes parts of Kansas, Missouri and Arkansas.

The emergence of the idea that the towns of Picher and Cardin should be relocated came from the recommendation of Governor's Keating's Task Force. The Task Force proposed that the best way to solve the myriad problems of the area was to create a 'world-class' wetlands system. The proposal was based in part on the use of passive treatment wetlands that have been utilized as cost effective and environmentally friendly means of removing toxic metals from contaminated mine water discharges elsewhere in the nation. The

Task Force's wetlands proposal included the creation of a new reservoir as a solution to the severe flooding problems that plague the area. The creation of the reservoir would necessitate the relocation of the towns of Picher and Cardin.

Three resident groups responded to the proposal by organizing and articulating competing frames in efforts to influence site remediation policy decisions. A pro-buyout/relocation advocacy group, the Tar Creek Basin Steering Committee, was formed in October 2000 in response to a recommendation included in the Task Force report. The report charged the committee with exploring the issue of relocating the towns of Picher and Cardin. The group, composed of residents of the communities, took a determined and vocal stand that the federal government should buy the residents homes and property at a fair price or relocate the towns of Picher and Cardin in a safe location. Committee members were often quoted in the media and were in a position to have direct access to government agencies.

Another citizens group called Speak Out was formed in response to the formation of the Tar Creek Basin Steering Committee to ensure that the views of the anti-buyout/relocation residents were being clearly articulated to the broader public. Members of Speak Out attended public meetings and conducted media interviews to recruit supporters and promote their views in the Picher and Cardin communities.

American Indians were the first residents to organize a group to bring awareness to the plight of the people living in the Tar Creek Superfund Site. In 1993, the Indian Health Service reported that 34% of 192 American Indian children living in the Tar Creek Superfund Site area had blood lead levels above the thresholds considered dangerous to human health. In 1995, Nancy Scott, Cherokee Tribe Learn and Serve Manager, met with Miami (the largest town in the immediate area, located just a few miles from the Superfund site) High School students to challenge them to work to increase local knowledge about the dangers of lead. School counselor Rebecca Jim became a mentor to the student group, called the Cherokee Volunteer Society. The society began activities to raise awareness in the local communities and in the regional and national media. They put on several events: the Tar Creek Fishing Tournament (meant as irony, as there are no fish in severely contaminated sections of the stream), the Toxic Tour and the annual National Tar Creek Conference. They also published student writings in a book: *Tar Creek Anthology: The Legacy*. The group has continued to host the three events annually and a follow up anthology was published in 2003.

An intertribal group, Tribal Efforts against Lead (TEAL), was organized in 1996 under a National Indian Environmental Health Service (NIEHS) initiative called

Community-Based Participatory Research (CBPR). CBPR researchers and community members from eight Ottawa County tribes created the TEAL project to develop and enact strategies for reaching out to the community. The project used a lay health advisor model to build on existing social networks within the communities to prevent high lead blood levels and promote health through action plans for behavioral and policy change^[24].

Also in 1996, a class-action lawsuit was filed by Elouise Cobell against the USDOJ, alleging that the federal government mismanaged trust accounts, costing the Indians billions of dollars. A federal judge ruled in 1999 that the Secretary of the Interior and the Treasury department had breached their trust obligations. The lawsuit involved the Quapaw Tribe because the USDOJ entered into mining agreements on lands in the Superfund site held in trust for individual Quapaw members.

In 1997, Rebecca Jim and Earl Hatley, both of American Indian heritage, co-founded the Local Environmental Action Demanded (LEAD) Agency, a local non-profit corporation dedicated to educating the community about environmental concerns, taking action to counter environmental hazards faced by the residents, and partnering with other environmental organizations to raise awareness of the issues faced by the residents of the area.

Below we define and discuss the three frames articulated and advanced by residents involved in the Tar Creek Steering Committee, the Speak Out group and the Quapaw Tribe and their supporters.

Remove the people from the threat: The pro-buyout/relocation frame: Pro-buyout/relocation advocates believe that the only reasonable response to the health and safety risks faced by the residents and the drastic decline of the Picher and Cardin economies is for the federal government to fund a buyout that will relocate the residents. They argue that their communities should be reconstituted at a safe location close to the current towns, but the main focus centers on removing residents from health and safety threats.

Diagnostic Frame (problem identification): These residents regard the primary issue as unacceptable health and safety risks faced by the Tar Creek site residents. Health and safety risks include the hazards associated with wind-blown dust from the chat piles and millponds, subsidence of the mine tunnels, open mineshafts and boreholes, exposure to contaminated water, flooding caused by chat clogging area streams and contamination of the area's drinking water. Anxiety about the threat that lead contamination poses to the children in the area predominates the residents' worries.

Another important concern is the devastating decline in the local economies, especially in the communities of Picher and Cardin, following the designation of the area as a Superfund site. Many of the residents and businesses that could afford to move have done so, decimating the tax revenues the towns rely on to support vital services. Three residents' comments exemplify these concerns:

The children's health and blood lead levels...is the most important as far as myself and the people in town are concerned because the exposure to lead is taking away the children's ability to learn and they can never get that back. Then you have the overall human health, which touches on a vast array of health problems in the area. It seems that our cancer rate in this area is fairly high among its residents and even some children. The mold issue (resulting from poor drainage around resident's homes) is something that has come to light...I think we're going to see some serious health effects from that in years to come [caused] by the remediation. Air quality is next, that's due to all the local chat dust that we have that covers this whole area, since that problem exists over so many square miles there's no way we can get away from that. That would cover people with breathing problems and things like that, once that stuffs in your lungs you can't get rid of it. Water quality is a big problem, our drinking water is high in mineral content, it's a very poor quality and relatively unsafe to drink. The chat is causing continuous lead exposure to the kids and it's also creating the chat dust problem.

The community itself, the infrastructure of the community itself is such that it's been going downhill for some time and there is no tax base left. Picher has the highest tax rate in the state of Oklahoma-10.5% sales tax. But there are not enough businesses even at that rate to sustain the community. Businesses are just slowly leaving. So the amount of money that the community is bringing in is not enough to sustain the infrastructure. They don't have a full time fire department, they don't have a full time police department, they had to give their ambulance up and they are very limited on how much money they can spend on sewers and water and that sort of thing. And so the town is dying. People don't have the financial where-with-all to leave.

You know I can take you to some homes in Picher to meet some elderly ladies whose

husbands were miners and raised their children here, who live in these God-awful rundown shacks. And they will tell you, they're just stuck, you know. I can't sell my house, it's not worth anything, even if I sold it I don't have the money to go anyplace else, I'm just stuck here in this place...then you have these poor people on fixed incomes who are just stuck there. I really don't know what they are going to do. And when the land rent went up (the Bureau of Indian Affairs raised rent on Indian trust property), a lot of these elderly people had to go to the bank and borrow money to pay their land rent and finance it on a twelve month basis. If your land rent was \$70 dollars a year and it went up to \$400...we have people who are only making \$500 dollars a month. That's a catastrophe, that's a real catastrophe.

Diagnostic frame (problem attribution): Pro-buyout/relocation advocates attribute the problems to inadequate and ineffectual remediation activities undertaken by the USEPA. They believe these activities, which have included removing contaminated soils from residents' yards, have only created additional hardships and damaged residents' homes and local roads. They also contend any additional remediation actions taken in the future will take too long to be effective and will only subject the residents to additional hazards. The residents also fear a proposal to move the chat into a single large pile on Quapaw-owned land, believing the process will stir up large amounts of toxic dust. These residents believe that USEPA actions have done little to help the situation, as illustrated by these representative quotes:

Cleaning up the yard so little kids can dig in the dirt has been nothing but a \$40 million dollar joke. The kids are still not safe.

Most of the yard remediation that they did here ruined people's yards. It also damaged the roads around here. I can't see that it's done any good for anyone.

Prognostic frame (proposed solution): Supporters of this frame argue that the only way to adequately protect the health of the people is to move them away from the chat piles-the primary source of lead exposure. They are most concerned with the welfare of the residents and the communities, which they view is best served by relocating the communities to a safer location and advocate a federal buyout of residents that would pay the fair market value for their property if it were not located in the Superfund site.

They are fed up with government agencies that, in their view, constantly propose more research studies rather than taking action that is long overdue. Government agencies have argued that the complexity of the situation has complicated efforts to come up with a holistic solution and stated that more time is needed to resolve all the issues. Pro-buyout/location advocates counter that the complexity of the situation is irrelevant. For example, a physician who supports buyout/relocation states:

The environmental issues are incredibly complicated. The responsible-party issue is incredibly complicated. The sociological issues are complicated. But the health issues are not complicated. If you look at the data, you come to the inescapable conclusion: We've got to get those people the hell out of there.

Motivational frame (call to action and justifying rationale): This group believes that the general public will support their views and pressure legislators to fund a buyout if they understand the magnitude of the health and safety risks faced by Tar Creek residents. They use a representative anecdote that emphasizes the health risks of the children from lead exposure, abandoned mine workings and mine-tunnel cave-ins. In doing so, they use vocabularies of motive that stress the urgency of the situation and the severity of the threat and that refer to traditional American values such as the concepts of fairness and pursuing the American dream. In addition, they stress that removing the residents from the threat is the most reasonable course of action and the only one that makes financial sense given that over \$100 million has already been spent which did little, if anything, to protect the residents from the risks. The following quotes by respondents illustrate these sentiments:

You have got to get the kids out of here. Buy us out. We want a fair deal. Treat us fairly and we'll do it. We have to get the people out of here.

Every day, we diminish the propensity for our children to pursue the American dream.

Do we have to wait until someone's child turns up missing? Part of downtown Picher rests above a mining pit that is big enough to hold the Astrodome. The solution is so simple. It only takes a few years to move a city, but you can remediate forever.

Remove the threat from the people: The anti-buyout/relocation frame: Another group of Picher-Cardin residents believe that the health and safety risks

are grossly overstated and that the communities should remain in their current locations. They argue that appropriate remediation actions can remove any threats to the people, eliminate other environmental problems and restore economic viability.

Diagnostic frame (problem identification): The diagnostic frame of the anti-buyout/relocation advocates is that the health and safety risks claimed by others have seriously undermined the economic security and wellbeing of the communities. Residents articulating this frame believe those who support a buyout/relocation are greedy scaremongers that are threatening their economic and social life.

They believe some environmental problems exist, such as flooding, negative impacts on some streams due to acid mine drainage, and mine tunnel subsidence. Some also admit that lead contamination may be causing problems for a few children, but insist the environmental health effects are overblown. Others adamantly reject any idea that lead contamination is an issue. Threats from abandoned mine workings and cave-ins are also downplayed. The following quotes reflect the respondents' concerns:

Obviously, lead causes impairments. I am not going to argue the facts with them. But I have seen and talked to too many folks that say my kids have done this and have done that. To say well look at what else they could have done if they hadn't lived here is like saying, well I could have probably went to college and got a degree and maybe I could be doing something else too...I have a feeling that those folks are doing what they want to do also. It is so simple to say that kid has lead poisoning. That must be the problem, [if] the kid is not excelling. But show me that [lead is the problem] on an individual basis, don't just tell me that because we live in this area, that my kids are dumb; because I don't believe that.

I don't believe in this lead contamination period. I've never known anybody having lead contamination. I worked for Eagle Picher in the mines. I've run mines on my own. We've played in it. We stood bare-footed and by gosh and shoveled the God darn stuff everyday. I didn't notice that we were overly idiots you know. I have been through schools, supported this one every since I can remember and I've never seen a kid that I thought was lead, you know, I wouldn't put it a slow learner on account of lead. Every school has got slow learners. I don't care who they are. And if you go through this one right out here, you've got

slow learners, not any more than anybody else but mostly when you look at the background they come from, these drug heads there aren't no question about where it comes out of.

The only cave-in all of these years that has ever happened in this town happened right north of here. That would be two and a half blocks. It did cave down [but] it never even woke the old boy up in the house. It never turned the electric off. Two days later he drives down and loads the house up and moves it out. That is the only one in this town in all of these years and you talk about being afraid of caving-in and subsidence and maybe some of these young ones might be but none of us ever been scared of caving in a hole.

Diagnostic frame (problem attribution): These residents are deeply suspicious of their counterparts who are advocating relocation. They also do not trust the Tribal Nations governments because they believe they are acting in their own self-interests to monopolize the sale of chat and regain control of the land. The anti-buyout advocates tend to be very cynical about past federal governmental actions which they believe have only benefited greedy residents, consultants and contractors.

Anti-buyout/relocation activists blame the state and federal government for not involving the community in remediation decisions and for exacerbating environmental and economic problems. They insist that government interference has only led to problems within the communities. A respondent summarized this position:

I blame the Governor's Task Force for making this a neighbor-against-neighbor issue. He started the Task Force and promised he would continue meeting until a decision was made, but that's been dumped and now everyone's fighting.

Prognostic frame (proposed solution): These residents argue that their current communities should be restored in their existing locations rather than abandoning them for the relocation option. They are willing to defer to government experts only so far as they perceive that the officials respect their autonomy. The bottom line for the anti-buyout/relocation advocates is that the federal and state government should work with the communities to stabilize the mine tunnels to prevent subsidence, restore proper drainage to prevent flooding, fix any problems they created with past remediation activities and assist in the economic recovery of the area.

Rather than risk losing their town and social identity, they are willing to let the government agencies decide the best course of action for reducing environmental risks and restoring economic viability. The former Mayor of Picher summarized the view held by the residents opposing relocation:

Some are older people who have been here their whole lives and they don't want to go anywhere else. A lot of them I call the true Picherites. This is their home and they really don't want to go anywhere. Here we have the Senator (James Inhofe), the DEQ (Oklahoma Department of Environmental Quality) and [the] USEPA saying it can be cleaned up. The ideas these people have are workable. I drive a truck for a living, so I don't know, but a lot of these things are no-brainers. If I thought it couldn't be cleaned up, I wouldn't say any of this.

Motivational frame (call to action and justifying rationale): The anti-buyout/relocation advocates believe they have strong local support. They think that if locally elected state officials would assume a larger role in the decision-making process the relocation alternative would disappear as an option. They used a representative anecdote that emphasizes the primacy of the community in making its own decisions. Their vocabularies of motive include recognizing community values and traditional American values of self-sufficiency and autonomy and make reference to their deep ties to the communities and the dominance of their views as members of the communities. The following comments exemplify these concerns:

They have to recognize us as the primary stakeholders. I don't care how you look at it; we are the customers. This can't be done to us; it should be done with us. This is our community.

They are going to have to drag me out. My roots are too deep here. I'm not going to sit by and watch them kill my town.

Restore the land: The Indian injustice frame: The Quapaw Tribe and other site residents of American Indian heritage advocate a third frame that focuses on environmental racism and injustice. They contend that they have intentionally been discriminated against by the federal government in the past and continue to be unfairly excluded from policy decision-making processes in the present. The primary focus for advocates of this frame is on returning tribal land to its natural state and restitution for past government injustices.

Diagnostic frame (problem identification): Advocates of the Indian injustice frame believe the federal government owes them total restoration of the land and just compensation for mismanagement of mining leases managed by the BIA. They also believe the majority of the chat within the site is a valuable economic resource that belongs to the Quapaw Tribe. They are adamant that the tribe be allowed to manage and sell the chat as a condition of any remediation effort. The Quapaw Tribe and nine other area tribes-the Cherokee, Modoc, Peoria, Ottawa, Seneca-Cayuga, Eastern Shawnee, Shawnee and Wyandotte-are also concerned that contaminated surface water and sediments at the site and downstream are resulting in hazardous toxins being present in plants and wildlife, thus threatening their traditional tribal practices. The Chairman of the Quapaw Tribal Business Committee summarizes the Quapaw view:

The corporate and federal stewardship raped the land and created a scandalous legacy that now threatens the health and welfare of the Quapaw Tribe, its children and others living in the Quapaw reservation area. The public debate so far has failed to acknowledge the right of the Quapaw people or O-Gah-Pah, to a clean environment, property rights and other rights.

An environmental consultant to six of the area tribes asserts that tribal practices, such as cooking river fish whole, consumption of native plants and use of plants as medicine, result in increased exposure to contamination and threaten traditional cultural practices:

If [contamination] levels render tribal practices unsafe, then cultural genocide will occur and tribes will die. [The government agencies should be] studying wildlife, plant life and aquatic life throughout the site, downstream and into Grand Lake.

Diagnostic frame (problem attribution): The Quapaw believe their rights were abused by the BIA, their sovereignty was compromised and their land was destroyed through unfair mine leasing practices. They contend that the BIA inappropriately negotiated lease conditions that were favorable to the mining companies at the expense of the Quapaw-conditions that resulted in royalty fees being below market rates and releasing company bonds without requiring that the companies implement procedures for protecting the health of the environment. Two local residents discuss how the Quapaw were left with a bitter legacy:

They (the Quapaw) were wealthy for a time. But in those days, if you were a full-blood, you were degraded by the government, which said you couldn't handle your own affairs, so you were assigned a guardian to take care of your business affairs. Today that would be a middleman. Guess who got the diamond and who got the mine? The federal government has wronged the Quapaw. This land is our heritage. Clean up our land; the people...have waited long enough.

Corporate mining leases negotiated and approved by the federal government failed to contain even minimal cleanup standards that were otherwise common for the day. Contrary to engineering standards, operators were permitted to undermine the surface, the source of the sinkholes and subsidence common in the Picher and Cardin areas. As the mineral reserves were depleted, federal regulators knew that the mines would flood and acid mine drainage would foul the land. Despite this, the federal government released the mining company bonds without requiring a cleanup.

The Quapaw also believe they have intentionally been excluded from policy decision-making processes. The former Chairwoman of the Quapaw Tribal Business Committee, responding to news in October 2001 that President George W. Bush would appoint senior level representatives from federal agencies to assist with remediation efforts^[26]:

I would like to convey my great disappointment with the manner in which recent meetings have taken place and decisions have been made regarding the Tar Creek site. Approximately 70 percent of the site is on lands owned by the Quapaw Tribe and its members. How can anything happen here without our involvement? The Quapaw Tribe is a sovereign nation, a government made up of the majority of the stakeholders at the site, yet we are frequently excluded from many activities and meetings involving senior level state and federal officials.

Prognostic frame (proposed solution): The advocates of the injustice frame insist they be compensated for loss of revenues due the Quapaw Tribe and its members from federal government mismanagement of mining lease royalty revenues. They believe that the tribe is owed damages for the mining practices that destroyed their land. They also argue that the land must be restored to its natural state.

Despite its toxicity, the chat that is located on tribal land is viewed as a valuable commodity that has been promised to the tribe. An integral element of this frame is that the Quapaw tribe be allowed to manage and sell the chat, which is potentially worth millions of dollars. In their view, any efforts to remediate the area must include these issues. The Quapaw propose argue that the government should consolidate the chat into a single location where it can be managed and sold by the tribe. The Chairman of the Quapaw Tribal Business Committee outlines the tribe's position regarding the chat:

Beyond the enormous health effects, there is another forgotten problem-the contaminated land and the toxic chat is, for better or worse, property promised by the federal government and the mining companies to be valuable for gravel. Without question, the tribe wants the environmental mess addressed. The tribe wants a safe home for its families and its children. At the same time, the tribe wants to have its members' property rights respected, just as everyone else does. The perspective of many involved in the current debate is simply that members of the Quapaw tribe own some of the chat that has to be cleaned up. The Indians often seem to be a minor obstacle to state and federal planning. But, this is changing and the public debate needs to acknowledge this change.

Motivational frame (call to action and justifying rationale): Supporters of the Restore the Land/Indian Injustice frame insist that the problems of the Superfund site are tribal issues and that their involvement is crucial for devising appropriate solutions. Their representative anecdote is to assert tribal sovereignty and claim environmental injustice. They contend that any actions taken by the federal government to remediate Tar Creek must be made with the full participation of the area tribes and must include fair compensation for past injustices against the Quapaw tribe and its members. These residents use vocabularies of motive that include references to tribal independence and traditional American values of democracy and justice:

The Quapaw Tribe has just been overlooked. For years they didn't have the economic or political power to participate in important decisions there. That is changing.

The Quapaw Tribe's dream is of tribal independence, for justice for cultural and environmental wrongs made right. It is the first and forgotten American dream.

DISCUSSION

While each of the three competing resident group frames reveals distinct differences, there are some points on which they are consistent. The most prominent of these is problem attribution. All three frames identify the major cause of the problems at the site as the inadequate and ineffective remediation and management actions of the state and federal governments. All three also seek support of their frames by utilizing representative anecdotes that use vocabularies of meaning that emphasize cultural values shared by the general public.

The most striking differences between the frames are the preferred solutions advocated by each group. The three groups engage in heated framing contests to promote their favored course of action with the primary targets being the general public and the state and federal governments. Each group attempted to discredit their opponents, accusing them of self-interested motives and asserting they are only concerned with how they can benefit from government actions rather than the overall public good.

Evidence suggests that each stakeholder group was able to influence policy decisions by publicly promoting their problem and solution frame. The effectiveness of each group's frame varied as did the ancillary actions of the groups as each struggled to win support from the public and local, state and federal politicians for their proposed remediation solutions.

Frame effectiveness: The 2000 Keating Task Force world-class wetlands proposal triggered the emergence of the residents' framing contest and was the beginning of a period of intense political maneuvering between the three citizen stakeholder groups and state politicians. Evidence suggests that the framing strategy of the pro-buyout/relocation activists was the most effective at winning broad statewide support from local residents, the general public and influential individuals. This group appears to have been able to significantly influence political actions and policy decisions concerning remediation actions at the site. The advocates of the Indian Injustice frame were not as successful in gaining media attention or public support, but they were able to win the support of a powerful politician and significantly influence policy decisions. In contrast, the frame advocated by the anti-buyout/relocation activists received little media attention and no official public support from politicians or other officials.

US Senator James Inhofe, who chaired the Senate Environmental and Public Works Committee and continues to be the ranking Republican on the committee, was a key player in the policy decisions at the site, along with the then and current Governor of

Oklahoma, Brad Henry, a Democrat. Senator Inhofe's position on the buyout issue was initially aligned with the anti-buyout/relocation group frame when he vehemently opposed a government funded buyout and instead supported a comprehensive plan to address the environmental issues and revitalize the economies of the impacted communities. His stance ultimately shifted to supporting a federally-funded buyout following a series of events including a state-funded buyout of families with children under six enacted by Governor Henry. Senator Inhofe also supported the involvement of the Quapaw Tribe in decisions made regarding policies at the site, in part because of ongoing lawsuits brought against the USDOJ by the Tribe and its members.

The political controversy surrounding policy decisions at Tar Creek reached a peak in 2003-04. The intense political debate began when the incoming Governor, Brad Henry, a Democrat, said the state would sue the federal government if a plan for the area was not forthcoming from the Bush Administration. In response to the Governor's statement, Oklahoma Republican Party Chairman Gary Jones accused US Representative Brad Carson, a Democrat whose district included the site, of not being involved in the remediation effort. After visiting the Tar Creek area and meeting with local residents-who favored a buyout/relocation by 80-85% according to two unofficial polls conducted by the Tar Creek Steering Committee-Carson officially announced his support for a federally funded voluntary buyout/relocation plan and introduced authorizing legislation in the House on May 15th^[19].

Senator Inhofe countered with his own \$45 million scientifically-based and comprehensive plan for Tar Creek and insisted that a federal buyout/relocation was off the table^[20]. Other state politicians did not take definitive stands on a buyout/relocation, but supported the option as one that should be considered, stating that the wishes of the residents of the area should be given primary consideration in the decision-making process. The Tar Creek Basin Steering Committee attacked the Inhofe plan, stating that the communities felt that their concerns had been ignored. One participant summarized their argument:

The Oklahoma Plan is fatally flawed and simply another attempt at throwing money at Tar Creek to avoid addressing the health and safety problems facing the residents at the heart of the site.

Senator Inhofe was also instrumental in the creation and signing of a Memorandum of Understanding between the USEPA, USACE and USDOJ in May 2003 to facilitate the development of a holistic response for dealing with the pollution and other issues at Tar Creek and the surrounding region^[41].

Tar Creek became a prominent campaign issue at the end of 2003, when Carson ran unsuccessfully against Republican Tom Coburn for the US Senate. The Tar Creek Basin Steering Committee supported Carson and blasted Coburn, accusing him of ignoring Tar Creek when he previously served as the district's US Representative. A buyout supporter, Democrat Dan Boren, was elected to fill the US Representative seat vacated by Representative Carson when he decided to run for the Senate.

During this period, the pro-buyout/relocation activists' frame received substantial support from the media, especially the *Tulsa World*, a large regional newspaper, which took a strong pro-buyout/relocation stand and published numerous articles, editorials and political cartoons supporting the remove the people from the threat message. The *Tulsa World* published many stories that conveyed the representative anecdote employed by this frame and adopted the frame's vocabularies of motive in their editorial pieces.

Independent health experts also embraced the pro-buyout/relocation frame, focusing primarily on the health issues facing the children. Two of these experts, Dr. Leslie Beitsch, Oklahoma Health Commissioner and Dr. Bill Banner, a member of the United States Centers for Disease Control and Prevention's (CDC) Advisory Committee on Childhood Lead Poisoning Prevention, requested that the CDC investigate the issue and prepare a report of their findings on the health risks. Dr. Banner even went so far as to suggest that the continued presence of the residents in the area was politically motivated^[31]:

The citizens of the area have become hostages to the decision-making process. Their continued presence seems intended to maintain pressure for the finding and liability processes.

Coverage of the controversy in local and regional newspapers may have been instrumental in winning public support for the pro-buyout/relocation frame. An official poll of Oklahoma adults conducted by Consumer Logic and sponsored by the *Tulsa World* found that 54% of respondents support a federal government paying for removing residents from the Tar Creek Superfund Site. Support was even stronger in Tulsa, with 65% supporting a federal buyout^[29].

By December 2003, Governor Henry was seeking legislative support for a plan to buyout families that included children ages 6 and younger. The \$5 million dollar measure was signed into law in June 2004. At the same time, Senator Inhofe's stance was undergoing a subtle shift. In September 2003, the Senate Appropriations Committee directed the Agency for

Toxic Substances and Disease Registry (ATSDR) to develop a Report to Congress assessing the danger of lead poisoning to site residents, especially children. In November 2003, Senator Inhofe formally requested that the USEPA determine if residents face imminent and substantial danger to their health:

Health issues at the site remain a variable. We are asking the EPA, upon the public release of the Oklahoma Comprehensive Plan of the Tar Creek Superfund Site, under the authority of CERCLA to make a determination whether any residents within the Tar Creek site boundaries are at imminent risk. If they determine danger exists they are then, required by statute, to exercise all reasonable efforts to mitigate that risk.

He continued to insist however, that a government funded buyout would never happen, instead suggesting that residents could sell their property to companies that specialize in buying properties in environmentally troubled areas^[23].

Throughout 2003 Senator Inhofe's office was also participating in negotiations with the Quapaw Tribe and the USDOJ to settle the Cobell lawsuit and resolve financial and land-management issues surrounding the Tar Creek Superfund Site. The tribe was threatening to file additional lawsuits against the USDOJ and BIA^[30]. Inhofe's public statements reflected support for the Quapaw position and he added \$2 million to the 2004 appropriations request for the USDOJ to assist the Quapaw Tribe in consolidating Indian trust land interests^[40].

In April 2004, Inhofe agreed to meet with and tour the site with members of Tar Creek Basin Steering Committee. Members of the committee had begun promoting a new focus on the danger of mine tunnel cave-ins. The Senator subsequently backed appropriations to fund an USACE comprehensive study of the risk of cave-ins at the site. It was the first such study in the 26 year history of the site. In November 2004, the ASTDR report concluded that there was a risk of exposure to lead for Tar Creek residents^[2]. Inhofe now said that his decision would rest on the outcome of the subsidence report.

Following the release of the subsidence report^[39] in January 2006, Inhofe joined with Governor Henry and Congressman Boren to announce plans for a voluntary buyout for all residents of the site. He is currently working to secure additional federal funding for the plan. The plan is voluntary so that community residents are not required to leave and efforts to assist the local communities are ongoing. In addition, Inhofe was able to facilitate an agreement between the Quapaw Tribe

and the USDOJ regarding financial and land-management issues. A moratorium on the sale of tribal owned chat by the BIA and the USDOJ was lifted and the USEPA recently released a plan to deal with the chat piles and other mine, mill and smelter waste at the site. The plan was developed with input from the Quapaw Tribe and the downstream Tribes. It provides for the sale of chat from the site and includes remedial measures designed to address human health and ecological risks posed by contaminated soils and water^[43].

Senator Inhofe was the key target of influence for the three groups advocating different perspectives regarding the environmental problems at the site and the appropriate course of action needed to address these issues. Serving as a senior member of the Senate and as the former Chairman for the Senate Committee on the Environment and Public in a Republican controlled Congress provided Inhofe with a distinct advantage in securing funding legislation and other federal actions relevant to Tar Creek. The influence that congressmen wield over funding has increased as the Superfund trust fund has shifted to being financed by general appropriations. The corporate tax that initially funded the trust expired in 1995 and has not been renewed by Congress. As a result, there is a significant correlation between Superfund project funding and the congressional committees on which legislators serve^[36]. The ability of residents to utilize different problem and solution frames to win support from Senator Inhofe was crucial in their efforts to influence environmental policy decisions at Tar Creek.

CONCLUSION

In environmental disputes, scientific findings can provide substantial information about the causes and effects of environmental problems. However, even when scientists are able to reach consensus on these issues, they often cannot determine the values that should guide policy decisions for addressing the problems, or how to appropriately balance competing societal interests. These decisions are created through a social construction process that determines appropriate policy options. Frame analysis offers insight into the policy making process rather than simply accounting for its final outcome. It shows how specific discursive strategies can modify the decision making processes and how the discourses of different actors in environmental disputes are influenced by cultural norms.

To be effective, environmental policies must meet both substantial and procedural criteria. Substantive criteria include technical practicability, economic efficiency, political feasibility, administrative implement ability and social acceptability. The process

by which policies are formulated and implemented is equally important. The process must be open and inclusive of all who wish to participate and responsive and accountable to public stakeholders. Stakeholder acceptability is a key component of policy analysis and decision-making that is often overlooked. In complex environmental disputes such as Tar Creek, where there is substantial conflict between stakeholders and funding is dependent upon governmental sources, both public and stakeholder support for policy decision-making processes and outcomes are crucial.

As shown in this study, there is a dynamic interaction of mutual influence that exists between the frames of citizen stakeholders in environmental disputes on the one hand and the frames of politicians and other policy-makers responsible for making decisions on environmental problems on the other. Operating outside normal stakeholder involvement processes, the three Tar Creek resident groups were able to significantly alter the policy debate and influence the actions of politicians and ultimately policy decisions. Understanding how framing contests can impact the overall context of environmental decisions will allow policymakers to better respond to stakeholder concerns in a way that benefits the policy making process as well as policy outcomes.

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REFERENCES

1. Allen, G., 2003. Cleanup efforts at tar creek superfund site stalled.
<http://www.npr.org/templates/story/story.php?storyId=1338831>
2. Gerberding, J., 2004. Report to Congress: Tar Creek Superfund Site, Ottawa County, Oklahoma.
<http://www.atsdr.cdc.gov/sites/tarcreek/tarcreekreport.pdf>
3. Banner, W., 2003. Superfund site: A legacy of misplaced trust.
http://www.tulsaworld.com/TWPDFs/2003/Final/g_6_6_22_2003.PDF
4. Barringer, F., 2004. Despite cleanup at mine, dust and fear linger.
<http://query.nytimes.com/gst/fullpage.html?res=9903EFD81138F931A25757C0A9629C8B63&sec=&spn=&pagewanted=print>

5. Benford, R.D., 1993. You could be the hundredth monkey: Collective action frames and vocabularies of motive within the nuclear disarmament movement. *Sociol. Q.*, 34: 195-216. DOI: 10.1111/j.1533-8525.1993.tb00387.x
6. Benford, R.D., 2007. The college sports reform movement: Reframing the edutainment industry. *Sociol. Q.*, 48: 1-28. DOI: 10.1111/j.1533-8525.2007.00068.x
7. Benford, R.D. and D.A. Snow, 2000. Framing processes and social movements: An overview and assessment. *Ann. Rev. Sociol.*, 26: 611-639. DOI: 10.1146/annurev.soc.26.1.611
8. Beierle, T.C., 2000. The Quality of stakeholder-based decisions: Lessons from the case study record. <http://ideas.repec.org/p/rff/dpaper/dp-00-56.html>
9. Best, J., 1987. Rhetoric in claims-making: Constructing the missing children problem. *Soc. Prob.*, 34: 101-121. DOI: 10.1525/sp.1987.34.2.03a00010
10. Buechler, S.M., 2000. *Social Movements in Advanced Capitalism*. 1st Edn., Oxford University Press, New York, ISBN: 0195126033, pp: 256.
11. Davis, C.B. and R.J. Lewicki, 2003. Environmental conflict resolution: Framing and intractability-an introduction. *Environ. Pract.*, 5: 200-206. DOI: 10.1017/S1466046603035580
12. Denzin, N.K., 1971. The logic of naturalist inquiry. *Soc. Force.*, 50: 166-182.
13. Elliott, M., 2003. Risk perception frames in environmental decision making. *Environ. Pract.*, 5: 214-222. DOI: 10.1017/S1466046603035609
14. Elliot, M., B. Gray and R.J. Lewicki, 2003. Lessons Learned about the Framing and Reframing of Intractable Environmental Conflicts. In: *Making Sense of Intractable Environmental Conflicts*, Lewicki, R.J., J. Roy, B. Gray and M. Elliot (Eds.). Island Press, USA., pp: 409-435.
15. Erikson, K., 1991. A New Species of Trouble. In: *Communities at Risk: Collective Responses to Technological Hazards*, Couch, S.R. and J.S. Kroll-Smith (Eds.). Peter Lang, New York, ISBN: 0820407127, pp: 11-29.
16. Gray, B., 2003. Framing of Environmental Disputes. In: *Making Sense of Intractable Environmental Conflicts*, Lewicki, R.J., J. Roy, B. Gray and M. Elliot (Eds.). Island Press, Washington DC., ISBN: 1559639318, pp: 11-34.
17. Gray, B., 2004. Strong opposition: Frame-based resistance to collaboration. *J. Commun. Applied Soc. Psychol.*, 14: 166-176. DOI: 10.1002/casp.773
18. Gunter, V. and S. Kroll Smith, 2006. *Volatile Places: A Sociology of Communities and Environmental Controversies*. 1st Wnd., Pine Forge Press, Thousand Oaks, CA., ISBN: 0761987509, pp: 256.
19. Brad, C., 2003. HR 2116: The tar creek restoration act. <http://www.govtrack.us/congress/bill.xpd?bill=h108-2116>
20. Oklahoma Department of Environmental Quality, 2003. Oklahoma Plan for Tar Creek. <http://www.deq.state.ok.us/LPDnew/Tarcreek/Redesign/Oklahoma%20Plan/Okplan.pdf>
21. Klandermans, B., 1984. Mobilization and participation: Social-psychological expansions of resource mobilization theory. *Am. Sociol. Rev.*, 49: 583-600. DOI: 10.2307/2095417
22. Krogman, N.T., 1996. Frame disputes in environmental controversies: The case of wetland regulations in Louisiana. *Sociol. Spect.*, 16: 371-400. <http://direct.bl.uk/bld/PlaceOrder.do?UIN=015655513&ETOC=RN&from=searchengine>
23. Myers, J. and B. Hoberock, 2003. Inhofe: Never a Buyout. http://www.tulsaworld.com/TWPDFs/2003/Final/A_1_12_18_2003.PDF
24. Caly, R., 2000. Let's work together: Connecting research and the community. *Environ. Health Perspect.*, 108: A500-A502. <http://www.ncbi.nlm.nih.gov/pubmed/11102314>
25. Oklahoma State Office of the Secretary of Environment, 2000. Reports of the Governor's Tar Creek Task Force (Governor Keating). <http://www.deq.state.ok.us/LPDnew/Tarcreek/>
26. Pierpoint, M., 2001. Oklahoma superfund talks exclude quapaw tribe. *Indian Country Today*. <http://www.highbeam.com/doc/1P1-79287747.html>
27. Roosevelt, M., 2004. The tragedy of Tar Creek. *Time Mag.*, 163: 42-47. <http://www.time.com/time/magazine/article/0,9171,612395-3,00.html>
28. Ryan, C., 1991. *Prime Time Activism: Media Strategies for Grassroots Organizing*. 4th End., Boston, ISBN: 0896084019, pp: 256.
29. Schafer, S., 2003. Oklahoma Poll: Buyout plan for Tar Creek finds support. http://www.tulsaworld.com/TWPDFs/2003/Final/a_1_10_9_2003.PDF
30. Schafer, S., 2003. Cleanup involves resolving legal fray. http://www.tulsaworld.com/TWPDFs/2003/Final/a_1_11_28_2003.PDF
31. Shriver, T.E., 2001. Environmental hazards and veterans framing of gulf war illness. *Sociol. Inquir.*, 71: 403-420. DOI: 10.1111/j.1475-682X.2001.tb01123.x
32. Snow, D.A. and R.D. Benford, 1988. Ideology, frame resonance and participant mobilization. *Int. Soc. Move. Res.*, 1: 197-217.
33. Snow, D.A., E.B. Rochford, S.K. Worden and R.D. Benford, 1986. Frame alignment processes, micromobilization and movement participation. *Am. Sociol. Rev.*, 51: 464-481. <http://www.nd.edu/~rmcveigh/reap/snow.pdf>
34. Snow, D.A. and R.D. Benford, 1992. Master Frames and Cycles of Protest. In: *Frontiers in Social Movement Theory*, Morris, A.D. and C. McClurg-Mueller (Eds.). Yale University Press, New Haven, CN., ISBN: 0300054858, pp: 400

35. Stern, P.C. and H.V. Fineburg, 1996. *Understanding Risk: Informing Decisions in a Democratic Society*. 1st Edn., National Academy Press, Washington DC., ISBN: 0309089565, pp: 264.
36. Stratmann, T., 2000. The Politics of Superfund. In: *Political Environmentalism: Going Behind the Green Curtain*, Anderson, T.L. (Ed.). Hoover Institution Press, Stanford, CA., ISBN: 0817997520, pp: 336.
37. Trachtenberg, Z. and W. Focht, 2004. Legitimacy and Watershed Policymaking: The Role of Public Participation. In: *Swimming Upstream: Collaborative Approaches to Watershed Management*, Sabatier, P., W. Focht, M. Lubell, Z. Trachtenberg, A. Vedlitzand and M. Matlock (Eds.). MIT Press, Cambridge, MA., ISBN: 0262195208, pp: 53-82.
38. Triandafyllidou, A. and A. Fotiou, 1998. Sustainability and modernity in the European Union: A frame theory approach to policy-making. *Sociol. Res.*, 3. <http://ideas.repec.org/a/sro/srosro/1997-29-1.html>
39. United States Army Corps of Engineers, 2006. Picher Mining Field, Northeastern Oklahoma Subsidence Evaluation Report. <http://www.swt.usace.army.mil/library/libraryDetail.cfm?ID=208>
40. United States Department of the Interior Director of Budget, 2004. House Floor and Senate Committee Action on the Fiscal Year 2004.
41. United States Environmental Protection Agency, 2003. Memorandum of Understanding. http://www.DOI.gov/news/03_News_Releases/memo.htm
42. United States Environmental Protection Agency, 2005. 3rd Five Year Review Report for the Tar Creek Superfund Site, Ottawa County, Oklahoma. <http://www.epa.gov/superfund/sites/fiveyear/f05-06007.pdf>
43. United States Environmental Protection Agency, 2008. Chat piles, other mine and mill waste, and smelter waste tar creek operable unit 4 superfund site. http://www.epa.gov/earth1r6/6sf/pdffiles/rod_tarcreek_ou4_final022008.pdf
44. Vyner, H.M., 1988. *Invisible Trauma: The Psychological Effects of Invisible Environmental Contaminants*. 1st Edn., Lexington Books, Lexington, MA., ISBN: 066912804X, pp: 240.