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Resolving Superfund Disputes Using Mediation

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RESOLVING SUPERFUND DISPUTES USING MEDIATION

by R. Steven Konkel

Superfund clean-up disputes are difficult to resolve because they involve multiple issues in addition to multiple parties. Environmental Protection Agency (EPA) and waste generator negotiators often disagree about how to interpret technical or scientific information. Examples of difficult issues include company shares of the clean-up cost, potential threat to groundwater, and what environmental standards apply to clean-up: "how clean is clean" is not at all well understood. Industry typically focuses on fairness of the allocation of cost and liability and the cost and responsibility for clean-up.

How can participants in negotiations achieve timely clean-ups that are environmentally-sound, permanent, and provide an equitable allocation of cost and liability? I examine the dispute over clean-up of the *Clothier* site, near Fulton, NY to answer this question. Clean Sites, Inc. (CSI), was hired to mediate by the waste generators--the same individuals were involved in stalled negotiations at another site [Apparently EPA failed to respond to a waste generator clean-up proposal at the other site after only one waste generator agreed to participate in an EPA clean-up proposal.] Primary parties to the *Clothier* dispute were up to 70 waste generators, EPA technical personnel, EPA legal staff, and the New York State Department of Environmental Conservation. The parties agreed to a waste generator-sponsored removal of 2,000 drums which had been buried on-site.

The mediator facilitated negotiations by resolving the fairness issue and helping structure an innovative settlement. First, consider how the *Clothier* mediator helped achieve fairness in allocating clean-up cost and liability. Clean Sites took the list of contributors of waste to the site provided by EPA, the so-called *Waste In* list. Then CSI created a 3,000-document computerized data base in order to add responsible parties tied to the site through shipping manifests and other documents tracing chemical movements and drum markings. The mediator eliminated double counting by excluding generators of solid waste--the drums at *Clothier* contained only liquid waste. Refinement of the *Waste In* list reduced the number of orphan shares, lowering costs to waste generators participating in clean-up.

Second, how was an ingenious settlement achieved? An intrinsic problem in past negotiations has been that EPA has nothing to sue recalcitrant parties for once interim clean-up is performed. In this case waste generators were given an incentive to settle when the mediator let them know that EPA planned to issue a Unilateral Order requiring the recalcitrant parties to do an expensive third phase of work. Thus recalcitrants pay a substantial economic penalty for refusing to participate in the waste generator-sponsored clean-up. If EPA is ultimately forced to do the third phase of clean-up itself, it can then sue the recalcitrant parties for treble damages as well as its clean-up costs. EPA reports that over 80 percent of the waste generators decided to participate in the $1.4 million interim removal. Hiring a mediator to help resolve fairness issues can increase the participation of waste generators. Another benefit is

shortening time between initial contact of the parties and site clean-up.

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Contrast the mediator's approach to refining the *Waste In* list with EPA's use of a "deep pocket" strategy in some other Superfund negotiations--where under the Superfund law and joint and several liability, one or several waste generators with resources can be forced to pay the entire clean-up cost. This strategy encourages litigation, according to interviews with *Clothier* parties. Litigation has substantial out-of-pocket costs, and often results in delays which increase the risk of public exposure to chemicals migrating from the site. Delays also can increase site clean-up costs.

Future research on the relative advantages of mediation to achieve settlement should concentrate on the "how clean is clean" issue as a key measure of the outcome. It is not enough to say that a clean-up was done or that the parties agreed. Confirming the prompt, proper, and permanent aspects of clean-up will require detailed technical analysis of residual risk to people and the environment.

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RISK ASSESSMENT AND MANAGEMENT FOR LIQUEFIED NATURAL GAS IMPORT TERMINALS

The overriding problem for a federal agency, such as the Federal Energy Regulatory Commission, in licensing liquefied natural gas (lng) import terminals, is deciding whether the design of the facility and the choice of the site promote public safety objectives. One such objective is to minimize the probability of events with disastrous consequences, such as human fatalities and injuries. This is done subject to implied or explicit cost constraints. Events such as Chernobyl, the Challenger explosion, and the Sandoz chemical spill point to the necessity for paying attention to risk sequences with very low probabilities. I have chosen to use Distrigas Corporation's siting of the Everett liquefied natural gas (LNG) import terminal in Boston Harbor in 1970-71 to evaluate the interrelationships among risk assessment, environmental impact assessment, and risk management. For LNG, the spectre of ignition of a vapor cloud following a marine spill raises substantial safety concern: a worst-case accident in Boston Harbor could cause 2500 fatalities from exposure to the vapor cloud and another 3000 fatalities from exposure to radiant heat.

My view is that risk assessment can assist decision makers in understanding **relative** risk tradeoffs among sites and facility designs. The Boston Harbor plant site was shown to be superior to river-accessible sites in the Delaware River Basin having greater navigational hazard. Decisions to issue a construction or operation permit are made on the basis of project need and whether the facility is judged to be too risky to a given population. Risk assessment focuses on probabilities and consequences of accidents for further projection of environmental impact by analysts. It is therefore an essential part of environmental review. It draws attention to average and/or worst-case accident sequences, and questions of scientific knowledge such as human exposure pathways.

The environmental impact statement (EIS) provides agencies with a vehicle to coordinate their risk control efforts. US Coast Guard escort of vessels carrying LNG through Boston Harbor clears a "safe-moving zone." This was the major risk measure required by the Federal Power Commission (FPC). This EIS fell far short of its potential: for example, alternative sites and designs were not objectively evaluated during post-construction facility review. Storage tank capacity and site configuration were taken as given at Everett, another mistake. Thus timing of the risk analysis can be important in designing a risk control strategy. Building public participation and scientific review into the EIS process should provide a check on agency, consultant, and intervenor bias in constructing risk sequences, probabilities and consequences, although values may be expected to influence choice of assumptions and models in subtle ways.

Further research is needed to determine the optimal investment where the benefits to society from additional safety measures only slightly exceed their cost. The agency can sponsor a forum for establishing joint fact-finding and coordinating research. Access of scientists to agency decision makers can establish a dialogue that assists the agency in resolving

Another purpose of assessing risk is to involve agencies that have roles in evacuation planning or remedial response before an accident occurs. Agency jurisdiction is often fragmented and forums are often needed for public review and participation. Contingency planning is a key process for agency decision makers as it sets the stage for actions in the event of accidents. Investors can assist regulators in licensing decisions first by doing risk assessments and then by adopting measures that reduce risk probabilities and mitigate potential accident consequences. This will reduce their potential liability from accident compensation claims. One benefit is lower insurance premiums.

RESOLVING TECHNICAL DISPUTES VIA SCIENCE COURTS

The essence of the science court proposal is that it presumes that a public policy dispute can be divided into deciding a question of scientific fact or understanding and then applying values or policy in a separate proceeding to resolve the dispute. There is at least one example that shows that this presumption can fail in practice--the aspartame (*Nutrasweet*) case. The US Food and Drug Administration (FDA) set up the first Public Board of Inquiry, a science court, in 1980 as part of the licensing process for the food additive. Aspartame contains phenylalanine, an amino acid, and aspartic acid. The scientific issue to be addressed was what is the effect of aspartame on the brain. To answer the scientific question, one must know the mechanism controlling phenylalanine uptake. After ingesting aspartame, plasma phenylalanine levels rise, then it is postulated that there is uptake of phenylalanine across the blood/brain barrier, and then possible adverse reactions. The PBOI failed to resolve the scientific question: there remains substantial scientific controversy over whether or not aspartame lowers the threshold effect for seizures and whether it may be responsible for migraine headaches and other adverse reactions. The FDA has received over 3,000 complaints to date claiming adverse effects occurred as a result of aspartame consumption.

In theory, science courts may not work because accepted scientific methodologies frustrate efforts to come up with meaningful, unambiguous statements of scientific fact relevant to the issue. For projecting cancer cases, for example, there are multiple data extrapolation techniques. All appear equally valid given the absence of human data, for translating tumors resulting from high doses administered in animal tests to low-dose tumor projections. This in turn can yield large discrepancies in the projections of human carcinogenicity from human exposure to the food additive, medicine, or pollutant. The notion of risk itself is a forecast of consequences and probabilities, and this probabilistic nature of science often invalidates "yes" or "no" responses to questions. The policy maker seeks a unanimity on scientific matters that may not be forthcoming, in order to justify policy options and to achieve closure.

In defense of the science court concept, I note here that adversarial procedures used in the science court may enlighten decision makers about where there is scientific agreement and where uncertainty is large, and what this means in terms of consequences. However, mediation or joint-fact finding efforts might be of similar use in obtaining this result.

Scientific facts may be overshadowed by uncertainty at the scientific frontier. Resolution of policy issues such as acid rain, the "Greenhouse Effect", and AIDS involves an extrapolation or projection outside the range of the available data. This is especially problematic where scientific uncertainty is large, or if uncertainty can change the direction of major consequences. For example, scientists have competing theories relevant to the role of the oceans in retarding global CO_2 build-up. Whether the oceans buffer the rise in CO_2 from combustion and tropical deforestation is a critical matter. The uncertain science impedes evaluation of energy

In practice, science courts may fail for yet another reason. People choose to go to court because they expect an outcome, according to rules of law, and they respect the use of the process without having a say into the choice of the judge. This will differ for willingness to submit the resolution of a public policy issue or the scientific question to a judge or panel of judges. First, as a participant I would be interested in whether the judge has ruled on matters reflecting his or her values or policy preferences, especially those pertinent to resolution of the dispute. Second, judges--whether knowledgeable individuals with legal training or eminent scientists--may find it extremely difficult to lay out, in advance, the criteria they will apply to decide the scientific issues. This is different than taking a divorce case or tort case to court.

Also, regarding the outcome, if science court judges cite a preponderance of the evidence criteria, little distinguishes science courts from traditional adjudication and administrative decision making. One objective of science courts is to reach agreement on scientific issues, or at least to clarify areas of agreement and areas of controversy. Another is to clearly separate the science from the policy. The aspartame science court did not achieve either objective.

Science courts might be improved by increasing access to the procedure, thereby countering the notion that it is somehow elitist because scientists have a very prominent role. Who participates is a thorny question because science usually makes people aware of situations (especially at the scientific frontier) and even an iterative process may fail to include legitimate participants. In the aspartame science court proceeding, an intervenor expressed concern about the disciplinary training of the experts included on the three-member scientific panel. What is the role of public interest groups in this process also complicates the design of procedures and due process considerations. The science court concept might benefit from provisions to allow participation from groups that become aware that they have a stake in the issue. Their participation may enhance knowledge of their interests as the scientific issues are being presented and differences in scientific fact resolved.

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EFFLUENT STANDARDS AND SENSITIVE POPULATIONS

The US Congress has passed laws such as the Clean Air Act requiring the Environmental Protection Agency (EPA) to set standards for pollutant emissions or ambient concentrations to protect public health. Setting effluent standards incorporating a safety margin is complicated by the distribution of "sensitives" within the population. The present approach relies on establishing threshold levels where exposure to pollutants cause measurable human health effects. Measurement is often obscured by confounding factors, such as whether people smoke, their diets, age and genetic material. In cases where animal tests are used for ethical reasons, the standard is usually set by applying a safety factor such as 10 or 100 to the dose-response results. Is there a better way to protect "sensitives?"

I propose that Congress direct EPA to experiment with setting higher or lower standards for criteria pollutants based on assessment of the benefits and costs of removing or adding controls. This balancing was forbidden for political reasons when Senator Muskie and other lawmakers based standard setting on the threshold effect. Now the existence of thresholds has been widely discredited by public health scientists. EPA is in an impossible bind when it attempts to resolve conflicts over the level of the standard for a given pollutant if it has no evidence that a threshold exists, or if the science implies that the standard should be set at zero and this standard would put an entire industry out of business. Cost-benefit balancing helps to bring scientific and engineering information into the decision on standard setting.

A second approach is to selectively adopt effluent charges instead of effluent standards to elicit clean-up of emissions. This has the advantage of providing an economic penalty for inefficiency--the more one pollutes, the higher the charge. This approach also provides an incentive to develop innovative process technology. Diesel particulate emissions might be a good area of application for this policy initiative.

As the Administrator of the EPA, I would move toward cost-benefit balancing by initiating a mediated negotiation ("regulatory negotiation"). I recommend a process centered on achieving a scientific consensus on the benefits and costs of increments of control of a criteria air pollutant, such as carbon monoxide. National Science Foundation, the Office of Technology Assessment, and prominent scientists should be commissioned to provide technical analysis. I would set up a risk communication program to enlist advocates of special interests in communicating risks and benefits to affected sensitive populations. Benefits could be estimated based on the number of people exposed to the pollutant, the toxicological evidence accumulated on its human health effects, animal studies, and severity of the risk. I propose to use risk assessment to further target pollutants for action. Cost estimates should consider the availability of substitute products and innovative production processes as well as pollution control technologies. My reservation about the cost-benefit balancing framework is that benefit/cost analysis is far from value-free: therefore the negotiations must focus on interests, joint fact-finding, and option generation, similar to

the partly successful National Coal Policy Project. -RSK-

MEDIATING ENVIRONMENTAL DISPUTES: PROSPECTS IN THE CURRENT AND A MORE IDEALIZED LEGISLATIVE-JUDICIAL REGIMEN

Mediated negotiation has been used to resolve disputes over allocation of fixed resources, public policy issues, and setting environmental standards. Key steps in the process that differ from those used in lawmaking and court proceedings include making rules for entry, deciding on representatives, setting agendas and establishing protocols, joint fact finding, and inventing options without committing to outcomes. The mediator plays a role often missing in other processes seeking voluntary consensus: having confidential discussions with parties, packaging information into a single negotiating text, drafting written agreements, linking the output to formal decision making, and contributing to monitoring and re-mediation procedures. How effective is mediation in resolving environmental disputes compared to letting experts decide or adjudication?

Mediation differs fundamentally from market transactions to allocate a good or right, or submitting the dispute to a judge to determine rules of law. Mediation emphasizes face-to-face participation and pays particular attention to process. The personal dimension exposes negotiators to interests which they may then consider more seriously than they would in an adversarial proceeding. Results achieved using mediation are enhanced by parties who consider stated interests of others (which may include intangible values), joint-fact finding, the generation of options without built-in commitments, and ratification by participants who know their interests, what has transpired, and the tradeoffs at hand. Scientific expertise can very useful in joint fact-finding efforts conducted during the mediation, once the parties agree on the proper scope. A mediator can ask questions targeted at what evidence would change a participant's mind about the state of nature relative to initial bargaining positions.

Government officials often concentrate on creating a public record, following due process, and relating means to ends in making decisions. Mediation puts government officials in a position to consider a wide array of options and to better understand the impacts of various decisions on the interests uncovered during mediation. On the other hand, they lose some of their administrative discretion and there are no guarantees that the process will actually lead to a consensual agreement. Time and resource commitments for the process are large relative to market transactions.

A more idealized legislative-judicial regimen might not have fewer conflicts, but it would be designed to seek pareto-optimal solutions with fewer lawsuits. Legal solutions can be expensive to obtain and delays in achieving viable solutions can expose populations to avoidable risk. The Europeans have developed a system whereby government and industry collaborate in standard setting and enforcement of regulations. If the viability of negotiated rulemaking could be established in the US, much litigation that follows rulemaking and permitting actions could be avoided. Besides seeking consensual industry/government relations, correctly priced externalities and elimination of subsidies would provide societal benefits by

improving transaction costs and institutionalizing economic efficiency.

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The design of a forum that lends credibility or legitimacy to participants' words, emotions, and arguments generates problem solving thinking, as opposed to "all or none" type strategies or "lumpy" solutions available from courts. For example, a judge can hear a case asking for an injunction in tort cases involving pollution. One such case is fugitive dust emissions from the operation of a cement plant. The judge is not often able to arrive at a solution that incorporates knowledge of best available control technology because the rule of law allows the nuisance to continue with operations as long as damages are paid, or the judge decides that the nuisance cannot continue and the plant must be closed. In short, a broader range of options may be available to the negotiating parties. Mediation is built around making these options transparent.

GOVERNMENTAL INNOVATION POLICY: INCORPORATING A WIDE VIEW

Government decision makers mold industrial innovation policy in numerous ways. They add costs to products and provide subsidies for industries like troubled car manufacturers, railroads and transit systems. They design tax policies to encourage certain capital expenditures. Government also funds research that increases technological options as well as knowledge about environmental impact. These interventions interact with economic factors to establish the mix of economically-viable technologies. Government decisions affect the demand for science and engineering and create incentives and obstacles for business ventures.

Governmental decision makers play at least three prominent roles in environmental policy. First, they allocate fixed resources. Second, they determine the hierarchy of public policy priorities, including the relative importance of environmental policy in relation to energy, health, education and other policy. Third, they set environmental standards. The actions governmental decision makers take can add new costs, provide incentives for innovation in process design, promote research and development, and create markets for pollution control technology. How do we harmonize industrial innovation policy with pursuit of environmental policy goals?

Government decision makers should consider all positive externalities as well as concentrate on negative ones such as pollution. For example, income, employment, and multiplier effects of economic activity should be considered in looking at automobile technology and pollution controls. By considering the residuals over a long-term planning horizon, and expanding the boundaries of analysis, many more alternatives can be considered. Also the short-range focus of firms needs to be sacrificed in order to look at objectives and desired end states rather than immediate economic impact. Consider the development of hazardous substances policy by Environmental Protection agency officials. Clearly, internalizing residual management costs can change process economics in major ways, as well as constrict the market for certain products. From society's point of view there are net benefits to correct pricing. One appropriate environmental policy is to set up a framework where firms reduce waste generation to a technological minimum, then recycle and manage hazardous residuals through process change and decentralized decisions to improve production. This is actually being done in Ventura, California, where a 70 percent reduction has occurred among firms participating in a local technical assistance project. Timing (and perhaps government financial assistance) should be designed to push waste reduction technology to its limits without causing firms to go out of business. A consensual approach to identifying possibilities may be more productive than imposing hundreds or thousands of detailed substance regulations or standards on firms. Prevention is cheaper than site clean-up.

The advantage of a dialogue incorporating a wide view of perspectives and cost/benefit balancing is that sensitive populations who experience adverse reactions from exposure to levels below a given standard could be given protection--provided that costs of control are justified by the potential benefits. As long as costs are associated with pollution, there is

incentive for industrial innovators to attain lower emission levels.

GOVERNMENTAL INNOVATION POLICY : TOUGH ENVIRONMENTAL STANDARDS ARE NECESSARY

Government decision makers mold industrial innovation policy in numerous ways. They subsidize industries like troubled car manufacturers, railroads, the supersonic transport builders, and public transit systems. They design tax policies to promote selective capital expenditures. Government also funds applied research and demonstration projects that increase technological options. Government is a major source of knowledge about the environmental impact of technologies. Interventions alter the present and future mix of economically-viable technologies.

Governmental decision makers play at least three prominent roles in environmental policy: they allocate fixed resources, they determine the hierarchy of public policy priorities, and they work on establishing a framework for activity through design of legislation and setting of environmental standards. The actions governmental decision makers take can add new costs, provide incentives for innovation in process design, promote research and development, and create markets for pollution control technology. How do we harmonize industrial innovation policy with pursuit of environmental policy goals?

Experience with the technology-forcing regulations in the Clean Air Act of 1970 governing automobile emissions indicates that politics plays a critical part in attaining environmental objectives. In this case, industry claimed certain technology (evaporative emission seals and catalysts) was not available, and this entered the debate on how much to clean up and by what date. Thus a rationality-based concept such as cost/benefit balancing may not work in practice: parties promote their individual interests.

Rather than balance jobs and environmental quality, government decision makers should link industrial innovation policy to environmental policy by setting tough standards. Success in meeting environmental objectives is possible only if industry is forced to investigate new processes, develop pollution control technology, and internalize the costs of pollution. Reducing markets for products with particularly noxious effects has net social benefits. Even though the achievements of an automobile NO_x standard of 0.4 grams per mile was abandoned, the technology-forcing provisions of the Clean Air Act proved invaluable in achieving improvements in air quality at reasonable cost. One can usually backtrack if the standard is impossible to achieve. This strategy appears sound as long as industry is unable to convince legislators to remove controls or invalidate regulations, as happened with the fuel economy standards.

What is the best strategy? Environmentalists believe we should use technology-forcing provisions, require best available control technology, move toward strict and joint and several liability, and provide tax incentives to enlist technological innovators in achieving environmental objectives. The key is to provide the correct price signals to induce industrial innovation. Setting tough environmental standards and fighting efforts to weaken or postpone them is the best way to enlist technology in

efforts to maintain or improve environmental quality. -R. STEVEN KONKEL-