INTEROFFICE MEMORANDUM

DATE: March 11, 1990

TO: WQEP Personnel

FROM: Joe Glicker

SUBJECT: Convincing the Public…

Attached is a copy of a paper I gave to the B.C. Water and Wastewater Association a couple of week ago about "Convincing The Public That Drinking Water is Safe". It touches on some of the issues we discussed at our last organization development session on the relationship between the technical and the non-technical. I hope you find it helpful. Let me know of any comments, questions, or responses on it you may have.

cc: Mgtteam, Ross, Trudy

CONVINCING THE PUBLIC THAT DRINKING WATER IS SAFE

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Providing safe drinking water is the goal of every water utility. In meeting this goal, the water industry often used to be called a "silent service". Its employees provided the water and few outside the industry took notice or cared about what the industry did or how it was done as long as the water got to the tap.

Environmental awareness has changed that. Worries about pollution, the explosion in technology to study environmental problems and to spread information, and sales campaigns for home filters and bottled water, all have led to the public being more and more concerned about the quality of the water coming from the tap, even in the absence of any degradation of that quality.

The public's view of how well a utility is doing its job often used to be measured by whether or not water came out of the tap when it was needed. This was an objective, readily identified, measure. Utilities were perceived as part of "public works". Concern was about getting the physical water system in place.

Now that the infrastructure is in place, the public's view of a water utility is usually determined by how the public perceives the quality of the water that it now assumes will always be there when the tap is turned. While this water quality itself may be objectively determined, the public perception is formed by many subjective and emotional factors regardless of the objective water quality.

Satisfying these new public expectations requires activities, efforts and programs beyond those which water utilities have traditionally performed. Unlike the technical and financial programs that occupy most of a utility's resources, these programs must deal with subjective and emotional factors. They require interaction and involvement with the public. The industry can no longer afford to be a silent service.

However, like the technical and financial-programs, a program of public interactions will only be successful if it is based on an understanding of the nature of the subject matter — how the public perceives water quality and environmental issues. This paper will discuss how the public comes to its perceptions and how to deal effectively with the problems this presents. It also provides some examples from the Portland Water Bureau's experiences with putting this into practice.

How the Public Forms Risk Perceptions

Human beings are not particularly rational. This "irrationality" expresses itself in how the public perceives issues of risk and safety. When experts judge risks, their responses tend to correlate with technical estimates of annual injuries or fatalities. While lay people can also produce these estimates of annual fatalities reasonably well, when they judge risks, their responses relate to many more complicated factors. Table 1 (adapted from reference 1) presents a typical comparison of expert and lay assessments of risks.

Public risk perceptions are based on social, cultural and psychological factors. Researchers from these fields have identified many dimensions of risk that influence public perception and decision making on risk issues (see Table 2, adapted from reference 2). People judge risks on the basis of how likely it is that an effect will occur, how widespread the effects are, who is affected, and how familiar they are with the risk, amongst other factors. Issues of choice and control strongly influence risk perceptions." People perceive risks that are not voluntary, and which they do not control the source or management of, as being more dangerous. Risk perception is also strongly influenced by perceptions of the relationship of who incurs the risk to who receives the benefit. If one group is asked to bear the potential risks while another group reaps the benefits, then the activity will appear relatively more dangerous.

As an example of these factors, in Table 1, experts judge nuclear power as 20th most risky activity or technology among those listed, on the basis of the estimated number of injuries or fatalities it causes. The lay group judges it as most risky because the real risks are unknown, nuclear accidents have catastrophic consequences, these consequences can extend to future generations, those receiving the benefits of the nuclear power plant may not be the same as those who would suffer the consequences of an accident, and nuclear power is unfamiliar in everyday life. Neither of these approaches to deciding the relative risk of nuclear power is inherently "right". They both have merit, but they both lead to different decisions on the desirability of nuclear power.

Particularly influencing public perceptions on drinking water issues is the dread component of substances thought to cause cancer. While cancer causes only 20% of all deaths (3) and personal lifestyle related choices (smoking, food, alcohol, etc) are generally thought to be associated with 70% of all cancer and environmental pollution with less than *5%* (4), cancer evokes significant fear and anxiety. This, coupled with other factors such as lack of control over substances in drinking water, makes the public particularly sensitive to issues of potential carcinogens in water.

Risk concerns are often a surrogate for other social or ideological concerns. They may provide a basis or rationale for actions taken as a result of other, non-risk related beliefs. Pollution is often perceived as morally wrong, regardless of the level of risk or practicality of reducing the risk.

As an example, consider the growing trend toward consumer purchase of "organic" produce as a result of concerns about pesticides on foods. The carcinogenic risks of pesticides are often cited as the reason for consumer purchase of this produce. A recent risk assessment was conducted on food-borne carcinogenic risk (5). Estimates of known carcinogens in food, spices, flavorings, additives, pesticides and the like and simple calculations were used to define cancer risk from various components of food. The assessment estimated that 98% of the cancer risk in food comes from the traditional foods themselves (grains, fruits, vegetables, meat, poultry, etc); 2% comes from food additives (sugar, salt, spices, flavorings, etc); and 0.01% from pesticide residues. There have been instances where plant breeders have had to withdraw naturally insect-resistant vegetables from the market because of the toxicity of the natural chemicals within them (6). While this, and similar risk assessments may or may not be accurate, they clearly have not diminished the opposition of many to the use of pesticides on food crops. Pesticides are often perceived as unnecessary, as disproportionally affecting field workers and as being ecologically unsound. Thus, their relatively low cancer risk compared to the food itself may ultimately be irrelevant to public perception on whether or not to use them.

Contributing to the public perception of risk is the human difficulty in dealing with probability and uncertainty, both of which underlie risk formulations. Studies have shown that presenting the same risk information in different ways (say in terms of numbers of persons saved instead of numbers harmed) will influence how the situation is perceived and what actions will be taken (7). Potential losses seem larger than potential gains. Low probabilities seem larger than they are and high probabilities seem less than they are. That may be partly why a person may buy a lottery ticket and a pack of cigarettes at the same time (8).

Public perceptions are also influenced by "high signal events" (1). Some events have impact far beyond the direct harm they cause. Events that provide new information, or are seen as harbingers of further and possibly catastrophic consequences, may strongly influence public perceptions. Thus, a train wreck that claims many lives may produce relatively little social disturbance beyond that experienced by the victims' associates. But a nuclear power plant accident can change regional or national energy policy.

Understanding the Media

Because the media can set the public agenda and frame the debate on environmental issues, it is important to understand how the media sees environmental issues. It is also important to understand that how the media sees these issues is not much different than how the public sees them. Most of the lessons about the media apply to the public as a whole. (This material is discussed in more detail in references 10 and 11).

The news media are in the business of reporting news. They are not in the business of public education. Thus, <u>events</u> are important to the media, but <u>issues</u> and <u>ideas are not</u>. An environmental issue is news only if there is some event to accompany it – a violation of a standard and a public notice or a problem in the distribution system. When the media does cover an environmental story, it is rarely the science of the story that will be covered. The details of toxicology, risk assessment, and testing, which are all needed to understand an environmental issue, are not events and therefore are usually not newsworthy. What the media will cover is the "politics" of the issues – who says what.

While journalism strives for "objectivity", the word has different meaning in journalism than in science. In journalism, there are no "facts" and no "truth". There are only conflicting claims or opinions that must be covered as fairly and balanced as possible. Journalism's aim is to present these conflicting views so that the audience can decide for itself what is the truth. In presenting the various viewpoints, most media look for certain positions on issues. Consider a scale of positions on an issue that ranges from 0 to 10. Journalists will not pay a lot of attention to the 0's, 1's, 9's, and 10's since they tend to be too extreme to be credible. Similarly, they pay little attention to the 4's, 5's and 6's since they are too middle of the road to make for interesting reporting ("needs more research" does not made for a good headline). Thus, it is the 2's, 3's, 7's and 8's that get the attention – those people with the clearly defined and articulated position. Objectivity in the press then becomes giving these two groups their chance to present their views.

While reporters will present both sides of an issue to achieve balance, this does not mean that both sides will get equal attention. This is because claims of risk are inherently more newsworthy than claims of safety. Without an allegation of a problem, there is no event and therefore no story. The allegation of the problem is the story and therefore gets most of the attention. The counter opinion that everything is safe is reported, but only as a small part after the basic assertion of a problem is established. This is not bias as journalism

understands it.

Because of this definition of objectivity and how it is presented, the media reduce most stories to a dichotomy. The water is either safe to drink or it isn't. The treatment plant should either be built or it shouldn't. The gray areas, the subtle explanations, and the tradeoffs on environmental issues are often lost in this simplification process.

Reporters will also often try to personalize the story. This is because we all have to make individual personal decisions. Real people facing real decisions, and not abstract calculated uncertainties, is both more interesting to the audience and more reflective of what the audience will face.

Finally, reporters usually are not usually trained or educated in the areas of science and technology. They have to do their jobs with limited expertise and time. They often have to do several stories in a day on vastly different topics. They do not have the time or experience to understand complex, technical problems. Their job is to present the views of others on the issue and not to explain the technical aspects of the problem.

Understanding Public Reactions

Because of how the public views risks, emotion is a critical quality in any interaction with the public on environmental issues (10). Fears, anxieties, and other emotional issues form the basis of how the public will view the situation. If these feelings are not acknowledged in some way in the interaction, they boil over in destructive ways.

Issues of control and equity often underlie these emotions. Any environmental controversy has two components - the substantive issue of what should be done, and the process issue of who should decide what to do. If people feel shut out of the decision making process then they will often be unyielding on the substantive issue, even when the decision is in their best interests. Any unacknowledged emotion then gets chanelled into passionate actions against the decision.

This is compounded by the lack of trust that most people have in government and industry and by our society's current propensity for use of the adversarial judicial system to resolve disputes. Reassurances that everything is safe are generally received with skepticism and suspicion. Even among those who do not openly express their distrust, it is usually because they feel powerless and victimized rather than because they trust or believe that everything is well (10).

The public's reliance on emotional components of decision making is strengthened by the confusion that results from scientific disputes and disagreements (12). Some of this confusion is inherent in the methodologies by which science progresses. Theories of "the way it is" change over time as new facts and ideas emerge. Some of this confusion stems from the fact that different scientific disciplines, like epidemiology and toxicology, approach and solve similar problems in different ways, often leading to different conclusions. Some confusion results from the conservatism in public policy approaches that have been mixed in with the science to provide a margin of safety in the face of significant scientific uncertainties (13,14).

Personal experiences, anxieties, fears, difficulties in understanding probabilities and media coverage all

contribute to the public denying uncertainties, misjudging risks (sometimes overestimating them, sometimes underestimating them) and giving unwarranted confidence to judgements or opinions about facts. These difficulties do not usually go away in the presence of new evidence. New evidence may even make resistance greater because this new information reinforces the view that the emotional concerns have been ignored. Initial views are resistant to change. New evidence appears reliable if it is consistent with one's initial beliefs, but contrary evidence is dismissed as unreliable, erroneous or misapplied.

People do not have an unlimited capacity for the amount of information they can absorb or the pace in which it can be absorbed (15). While people want to be informed, they must feel comfortable with the nature and amount of information they are asked to take in. Too much information will make them feel overloaded and seem disinterested, while too little will cause them to form opinions and take actions based on wrong information. Similarly, it is easier for a person to tolerate change if it is spread slowly over a period of time than if it occurs all at once. Rapid dissemination of new information may trigger defenses that will distort the information.

Water has a unique role in emotional associations for people (15). Water is essential for life and is used by all people in virtually every situation. Notions of water contamination convey threats of sickness and great personal hardship. Notions of water purity and natural preservation convey suggestions of health, a peaceful existence, and a safe and protected life. Thus, discussions of water quality issues can be especially emotionally charged.

Like the media, the public also dichotomizes risks, because, ultimately, they will have to make dichotomous decisions. They will either have to buy bottled water or not, vote for the bond levy or not, or drink the water or not. This may cause the public to treat the risk as frightening or to dismiss it as trivial.

Dealing Effectively with the Public

Despite the difficulties presented by the above analysis of how the public perceives and deals with issues of environmental risk, a coherent approach to public interactions designed to achieve public confidence can still be fashioned. This approach relies upon the understanding, acceptance and fulfillment of the public's needs. While it may be possible to suppress public concerns or avoid needed actions for relatively short periods of time, these suppressed needs will ultimately assert themselves. The goal of communications must therefore be to develop an informed, reasonable, collaborative, solution oriented public.

The key to the approach is to accept and acknowledge the emotional responses and content as valid dimensions of the issue. The water utility must accept a new role for itself as part of its basic mission. What the public needs to feel confident in the decision making that it has entrusted to the utility is different than what the utility must do in order to make those decisions. The utility must bridge this gap so that the decisions it makes based on rational, scientific processes are acceptable to a public which judges acceptability on emotional and value driven criteria.

The concerns, values and wisdom that are inherent in lay conceptualizations of risk issues must be respected. The public must know that you care, that you understand and value their views of the issues. Underlying fears and hidden agendas must be stated and brought into the open. Trust and credibility are more important than quantitative data and facts in satisfying these emotional needs.

While <mark>trust-and-credibility are more important than data,</mark> decisions must be made on the basis of sound, scientific information. Judgements must be good ones. Trust and credibility are fed by competence and performance.

Accepting the emotional content of issues means acknowledging the uncertainties and assumptions involved in the decision making process. Difficulties in measurements, areas of lack of knowledge, and ranges of possible outcomes all need to be acknowledged and explained.

Because issues of control are so fundamental in determining reactions to perceived risks, it is critical to let those affected by or concerned with decisions participate in the decision making process. This does not mean that decisions are put up for a vote! The typical agency tactic of putting a "draft" decision up for review and comment also fails to provide the needed processes. What does work is to allow stakeholders to be heard and to be included early in decision making processes, and to present them with a range of options and as much needed factual background material as is available to work with so that their input can and does have an impact on the decision making.

Communications with the public must be a dialogue and not a "one-time shot". The public must be given time to learn, to accept, and to adjust to new information and to see that the dialogue results in changes on the part of the agency. This dialogue must be accomplished using multiple sources of credible information, such as health agencies, regulatory agencies and other perceived independent experts or trusted community leaders.

Information must be targeted to specific audience needs, concerns, preferences and levels of knowledge. Messages must be clear, focused, simple, concise, and contain minimal jargon. Human contact must be established with the audience. Warmth, caring, and understanding must be shown in communications.

If there are problems in a water system, get the information out quickly and accurately. Focus not on the problem, but on what is being done to solve it and how the public can help in that solution. Public debate over whether or not chlorination is carcinogenic is not as likely to be effective in satisfying public concerns as is discussion on what the utility is doing to minimize disinfection byproducts, regardless of how carcinogenic they may ultimately turn out to be.

Successful communication of information requires telling people three levels of information. They must be told <mark>what you have determined they ought to know</mark> in order to deal with the issue at hand. You must think through what your information goals are and what the audience need is and keep the emphasis on those areas. Next, people must be provided enough background or context information to prevent confusion or misunderstanding. They must be provided with the information that will keep them from going off-track. Finally, they must be given enough qualifiers and guidelines to prepare them for the future, for what you don't know or might learn later, so that they will not feel misled.

If risk comparisons are used, such as comparisons of the risks of getting one cancer in a million, then these must only be used wisely. These comparisons must be based on considerations of how the public perceives risks. The qualitative dimensions of risk perception must be used to provide risk characterizations of a similar character. Assumptions and uncertainties that go into the risk comparisons must be acknowledged. When available, standards from the government or other credible sources are useful. For example, saying

that the risk of death from cancer from chloroform in drinking water is equivalent to the risk of death from cancer from radiation from flying round trip cross country, while perhaps true (16), is not likely to be an effective risk comparison. The airplane cancer risk may be seen as a voluntary, familiar activity, within the control of the individual. The risk from chloroform is involuntary, beyond the control of the individual, and with a high dread factor. However, saying that the risk of cancer in drinking water from chloroform in a water supply is half the level that the Environmental Protection Agency says is safe, may be an effective means of risk comparison.

Finally, community and media relations must be seen as important, integral components of a utility's operation that are critical to the success of the utility and not as a necessary evil or something to shunt off to the side in favor of "real work".

Dealing Effectively with the Media

Dealing effectively with the media is similar to dealing effectively with the public. You must know what message you want to communicate and this must be done in simple, clear, concise terms. Communication with the media is best done as a dialogue, and not a one time affair. Do not wait for the reporters to come knocking on your door about a problem. Seek them out with stories you feel are important. Educate them about why it is important.

When reporters seek you out, be cooperative. Don't hide things from them, but instead explain why you cannot tell them information they would like, such as the data are unconfirmed and may have errors. Tell them when you will be able to give them the information they seek and then do so.

As with the public, know what points you want to make and stick to those points. Provide enough context and background information for the media to make sense of what you are telling them. Remember that you are really talking to the public through the media.

Show your feeling about the subject to them. Let them know you care, that you drink the water too and that your goals and values are the same as the community's.

If there are inaccuracies in stories or you do not like the slant of the story, follow up with the media. Call the reporter and editor and explain what you saw that was wrong with the story and why. Often it will result in a follow up story focused on your view, since your concerns may now become the "event" that is reported.

Putting It Into Practice - Portland Water Bureau's Program

Like programs for other utilities (17), Portland's efforts to assure the public that its water is safe have evolved over time. Community relations, customer service, administrative and water quality personnel all work in partnership to satisfy public expectations.

For many years, the Bureau has maintained an extensive water quality customer complaint program. Calls from customers are taken, their problems, questions and concerns discussed with them, and appropriate action taken. Consumer information on water quality is provided, lines are flushed and water samples from the home are often taken and analyzed.

A series of public information brochures have been prepared on water quality topics of interest and are run as bill stuffers. So far lead (twice), groundwater protection, use of home filters, and a discussion of the most often asked questions and their answers, have been among the topics. We have also prepared and distributed more specific information brochures about particular projects geared towards various stakeholders and interest groups.

A monthly water quality newsletter, from one to three pages in length, is mailed to a list that has grown to over 200 persons and organizations. This newsletter provides current information on legislative and regulatory issues, status of major projects, and details about water source protection, and quality issues. It is sent to environmental groups, news media, other governmental agencies, elected officials, industries and individuals who have expressed a detailed interest in water quality issues.

The Water Bureau provides speakers for community and interest group meetings to discuss water quality issues. Professional organizations, local college classes, neighborhood associations and environmental groups have all been addressed. The Bureau also has a public information trailer that is set up at various outdoor summer fairs around the city. Brochures and other information are distributed from this booth and consumers' individual questions are answered by those staffing it.

Close contact is maintained with federal and state regulators, local public health officials, and other water utilities in the Portland area, the State and the Northwest. We participate in regional and national American Water Works Association committees involved with public education and information. These contacts are used to exchange ideas and provide outside views and perspectives on decisions we make. State regulators in particular are involved early in decision making processes so that their expertise can be drawn upon.

The Bureau also maintains close contact with local news media. We have provided them with tours of our facilities, called them when we had things we thought might make good stories, and provided in-depth background briefings to meet their needs. We also have responded to their requests for information with as much as we have available.

The Bureau is in the process of conducting extensive public attitudes research to help us better design tools to respond to public needs for information. Through the use of focus groups, telephone surveys, and key community leader interviews, we are learning about the specifics of public concerns, values, level of understanding and desires as they relate to water issues.

A citizen Water Quality Advisory Committee has also been established. This Committee has members representing a wide range of community interests and meets monthly in formal public meetings to hear information on, discuss and provide policy advice to the Bureau on water treatment, water resource protection and other water quality related issues. Interested citizens also come to these meetings and present their concerns, ideas and issues they wish examined. An example of the types of issues that this Committee provides advice on, was the decision of which option to select in meeting the disinfection "CT" requirements of the Environmental Protection Agency's Surface Water Treatment Rule.

The final component of our program is a highly competent water quality staff and a very active water quality program. We do monitoring in anticipation of and in excess of regulatory requirements, we conduct studies to gain a better scientific understanding of the operation of our water system, and we vigorously participate in legislative and regulatory arenas to help shape the future that we will face. We present the

information from all these activities to the public using the above mechanisms.

The future presents many challenges for us in dealing with the public and maintaining public confidence in our agency. There will be treatment changes to meet new regulations, new supplies will have to be developed to meet the demand of a growing population, changing societal values on environmental issues will effect how we operate our existing supply system, and water rates will be going up to pay for all this. Only if the public is an informed partner working with our agency, will it be willing to make all this occur. An effective program of public interaction will be essential in achieving this.