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Blue Ribbon Commission Presentation

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WHAT ARE THE CHIEF CHALLENGES FOR A SUCCESSFUL SPENT FUEL AND HLW DISPOSAL PROGRAM?

"TODAY THE BIGGEST CHALLENGES TO WASTE DISPOSITION PROGRAMS ARE SOCIETAL IN NATURE. DIFFICULTIES IN ACHIEVING PUBLIC SUPPORT HAVE BEEN SERIOUSLY UNDERESTIMATED IN THE PAST, AND OPPORTUNITIES TO INCREASE PUBLIC INVOLVEMENT AND GAIN PUBLIC TRUST HAVE BEEN MISSED."

NRC, DISPOSITION OF HIGH-LEVEL NUCLEAR WASTE AND SPENT NUCLEAR FUEL. WASHINGTON: NAS, 2001, pp. 29-30.

Nuclear Waste: Knowledge Waste?

"A stalled nuclear waste program, and possible increase in wastes, beg for social science input into acceptable solutions."

Rosa, E. et. al., Science, 13 August 2010, pages 762-763.

WHAT FUNDAMENTAL SOCIETAL PROBLEMS ARE WE FACING?

- DISPOSING OF SPENT FUEL AND HLW IS A DEEP UNCERTAINTY PROBLEM;
- EFFECTIVE PUBLIC INVOLVEMENT AND COLLABORATION WILL BE REQUIRED AT ALL STAGES OF THE DISPOSAL PROCESS;
- FAIRNESS IN PROCESS AND RESULTS WILL BE ESSENTIAL BUT DIFFICULT TO ACHIEVE;
- THE PROCESS MUST MOVE FORWARD AND WIN BROAD SUPPORT UNDER CONDITIONS OF HIGH SOCIAL DISTRUST.

RADIOACTIVE WASTE DISPOSAL IS A DEEP UNCERTAINTY PROBLEM

- THE EXTRAORDINARILY LONG TIME FRAMES MAKE A “PROOF OF SAFETY” IMPOSSIBLE;
- THE PHYSICAL AND CHEMICAL PHENOMENA THAT CONTROL SITE AND REPOSITORY EVENTS AND THE NATURE OF OTHER FUTURE EVENTS (E.G.CLIMATE CHANGE);
- FUTURE INTERACTIONS WITH HUMAN SYSTEMS ARE ESSENTIALLY UNKNOWABLE;
  - FUTURE POPULATIONS
  - LIFE STYLES AND VALUES
  - HEALTH AND MEDICAL ISSUES
  - POLITICAL STABILITY

RADIOACTIVE WASTE DISPOSAL IS A DEEP UNCERTAINTY PROBLEM (cont.)

- THE DISPOSAL FACILITY WILL BE A FIRST-OF-A-KIND FACILITY AND RISKS AND UNCERTAINTIES WILL BE HIGHLY SITE-SPECIFIC;
- IMPLICATION: UNDERSTANDING OF RISKS AND UNCERTAINTY WILL BE EVOLUTIONARY WITH THE PROGRESS OF SCIENCE AND EXPERIENCE

ACHIEVING EFFECTIVE PUBLIC INVOLVEMENT AND COLLABORATION

- TWO-WAY RISK COMMUNICATION MUST BE FOR REAL;
- EXTENSIVE PUBLIC INVOLVEMENT, EXCEEDING SUBSTANTIALLY WHAT TYPICALLY PREVAILS IN FEDERAL PROJECTS, WILL BE REQUIRED;
- PUBLIC INVOLVEMENT WILL NEED TO ESTABLISH BASELINE PUBLIC PERCEPTIONS, VALUES, AND CONCERNS AND PROCEED THROUGH ALL PROJECT STAGES;
- ONGOING INDEPENDENT EVALUATION WILL BE NEEDED TO GUIDE THE DESIGN FOR MID-COURSE CORRECTIONS AND INFORM STEPWISE DEVELOPMENTS;

ACHIEVING EFFECTIVE PUBLIC INVOLVEMENT AND COLLABORATION (cont.)

- MAJOR UNCERTAINTIES WILL NEED TO BE SHARED OPENLY WITH STAKEHOLDERS AND PUBLICS;
- THE ENTIRE DISPOSAL DEVELOPMENT PROCESS NEEDS TO BE COLLABORATIVE WITH THE HOST STATE AND COMMUNITY;
- PUBLIC INVOLVEMENT SHOULD AIM AT MAXIMIZING VOLUNTARY CONSENT AND MINIMIZING COERCION.

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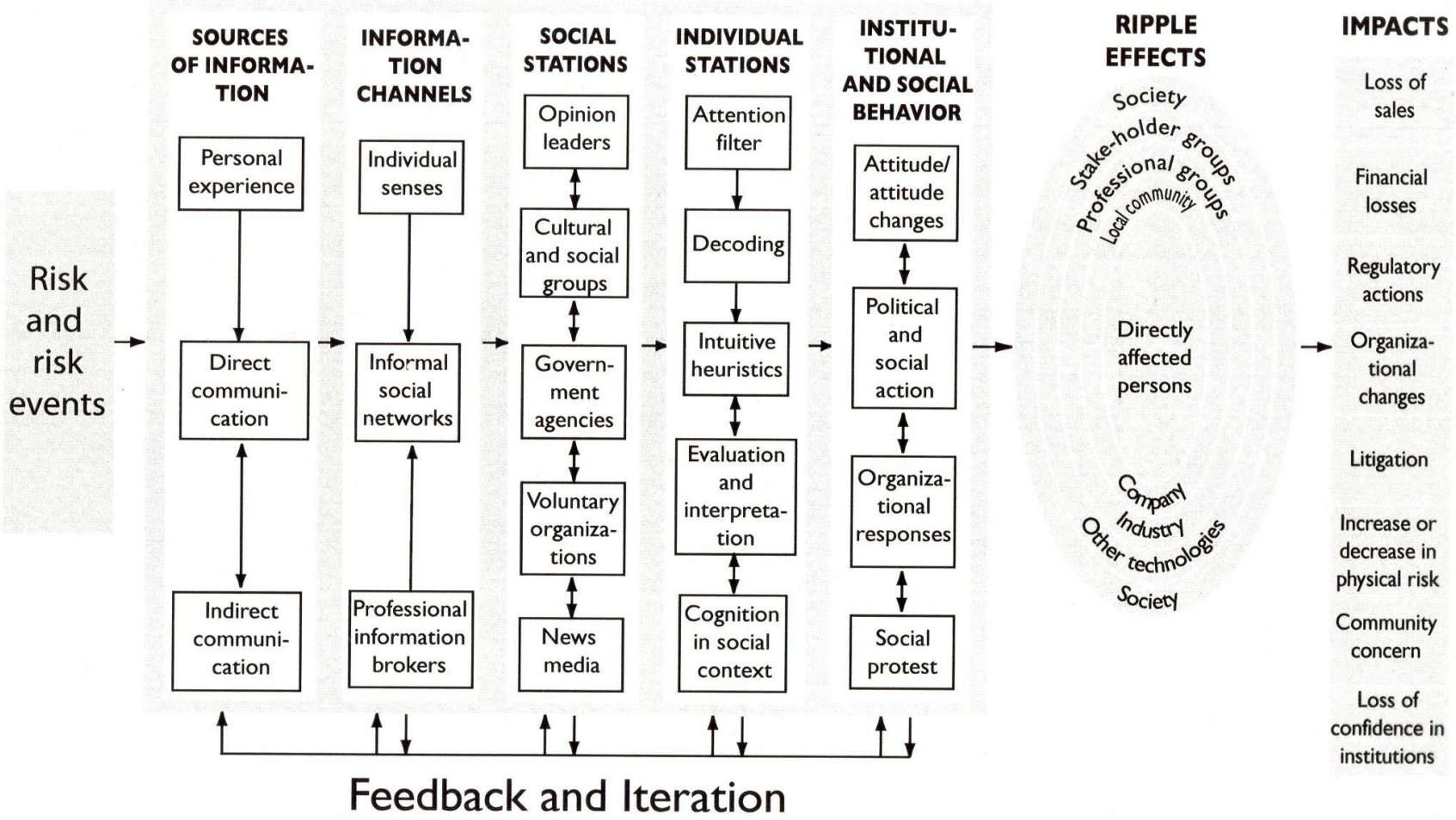
AMPLIFICATION AND ATTENUATION



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FAIRNESS IN PROCESS AND RESULTS WILL BE ESSENTIAL

- TWO TYPES OF FAIRNESS ARE REQUIRED—PROCEDURAL AND DISTRIBUTIONAL;
- THE PAST 25 YEARS HAVE BADLY VIOLATED THE EQUITY ARCHITECTURE OF THE NUCLEAR WASTE POLICY ACT AND THEREBY GUARANTEED CONFLICT AND EVENTUAL FAILURE;
- THE KEY TO FAIRNESS IN PROCESS IS THE EMPOWERMENT OF THE HOST STATES AND THOSE AT RISK FROM DISPOSAL UNCERTAINTIES, INCLUDING FUTURE GENERATIONS;
- THE KEY TO DISTRIBUTIONAL EQUITY IS COLLABORATIVE SHARING IN THE DECISION PROCESS;
- COMPENSATION TO REDRESS ANY REMAINING UNFAIRNESS WILL BE REQUIRED

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SOCIAL TRUST— A PRECIOUS RESOURCE

- OVER THE PAST 25 YEARS, DOE AND THE CONGRESS HAVE LOST THE TRUST OF THE PRINCIPAL STAKEHOLDERS AND PUBLICS IN THE MANAGEMENT OF RADIOACTIVE WASTES;
- SOCIAL TRUST ONCE LOST IS NOT EASILY REGAINED AND SO A NEW DISPOSAL PROGRAM WILL PROCEED UNDER CONDITIONS OF HIGH SOCIAL DISTRUST
- THE LOSS OF TRUST IS PRONOUNCED IN THE NUCLEAR AREA BUT IS SYSTEMIC ACROSS SOCIAL INSTITUTIONS IN THE U.S.

SOCIAL TRUST— A PRECIOUS RESOURCE (cont.)

- WHERE THOSE BEARING RISKS LACK TRUST IN THOSE MAKING DECISIONS, THEY DEMAND A GREATER ROLE IN DECISION MAKING.
- THE INTERACTION AMONG A HIGHLY DREADED HAZARD, LARGE UNCERTAINTIES, AND LOW SOCIAL TRUST CREATES UNUSUALLY DIFFICULT MANAGEMENT AND REGULATORY CHALLENGES.

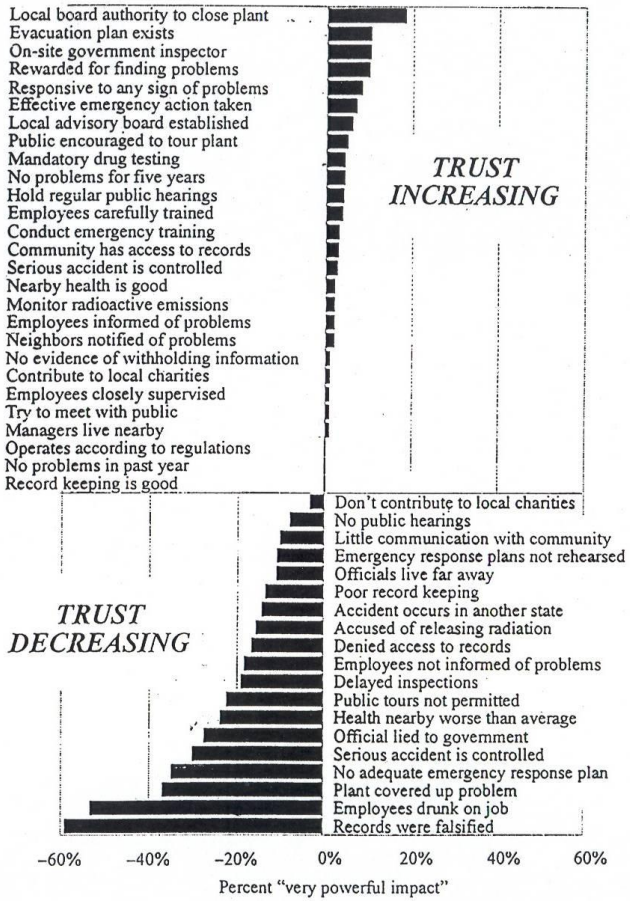

Figure 12. Differential impact of trust-increasing and trust-decresing events. Note: only percentages of Category 7 ratings (very powerful impact) are shown here. Source: Slovic (1993).

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IMPLICATIONS FOR REGULATORY SYSTEMS

- EXPLICIT RECOGNITION OF DEEP UNCERTAINTY AND THE EVOLUTIONARY NATURE OF KNOWLEDGE AND EXPERIENCE IS NEEDED;
- THE BURDEN OF PROOF IN UNCERTAINTY SHOULD BE BORNE BY THE DEVELOPER AND FEDERAL GOVERNMENT, NOT THE RISK BEARERS;
- THE SOUNDNESS OF ANY PROPOSED REGULATORY SYSTEM WILL BE JUDGED BY ITS FAIRNESS AS A MAJOR CRITERION;

IMPLICATIONS FOR REGULATORY SYSTEMS (cont.)

- REGULATORY SYSTEMS SHOULD EMPOWER HOST STATES, COMMUNITIES, AND THOSE AT RISK;
- REGULATORY SYSTEMS SHOULD BE BUILT AROUND ADAPTIVE MANAGEMENT PRINCIPLES AND PROCEED WITH DISPOSAL IN A STEPWISE FASHION;
- COMPENSATION SHOULD BE PROVIDED FOR IRREDUCIBLE RISK AND UNCERTAINTY, AND LACK OF FAIRNESS IN THE DECISION PROCESS.

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