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Emergency Action Plans: A Legal and Practical Blueprint Failing to Plan is Planning to Fail

Denis Binder



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EMERGENCY ACTION PLANS: A Legal and Practical Blueprint

“Failing to Plan is Planning to Fail”

PROFESSOR DENIS BINDER*

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Denis Binder

*Professor of Law, Chapman University, A.B. 1967, J.D. 1970, University of San Francisco, LL.M. 1971, S.J.D. 1973 University of Michigan. Professor Binder has been engaged in dam safety activities since 1978, and draws heavily upon this background, as well as the tragic events of 9/11, in preparing the article. The principles discussed in this article though, are not limited to dams or 9/11, and are of more general application. Much of the article’s focus is on major events, such as large scale disasters, but many of the principles are equally applicable to smaller facilities and incidents. Professor Binder acknowledges the research efforts of Ms. Rosa Sahagún and Ms. Shannon Suber, then law students at Chapman University. He also thanks Mr. Don Schmidt of Marsh, Inc., 200 Clarendon Street, Boston, Ma., 02116, and Mr. Doug Nelson, Regional Continuity Manager for Sierra Business Partners, 405 14th Street, Oakland, California 94612-2707, for their helpful suggestions.

INTRODUCTION

The tragic events of September 11 brought to the fore the need for viable emergency action plans (EAP's).¹ The goals are to minimize the impacts, mitigate the consequences, and facilitate recovery. These plans must be in effect when a disaster occurs such that their prompt implementation will reduce the resulting chaos, injuries, and damages. An emergency may often occur with little or no warning, thereby providing minimal time to assess and respond. However, planning and preparation may provide the means to promptly respond and minimize the adverse consequences. Implementation of an emergency action plan should therefore be one of the first responses in an emergency.

An emergency action plan is not designed to prevent an accident. Other measures must accomplish that goal.² Indeed the primary goal should be to prevent the incident and control the causes. EPA's are designed to minimize or mitigate the impacts and vulnerability when the tragedy occurs, reduce reaction time, facilitate recovery efforts, and rebuilding. An EPA may facilitate managing through chaos. The goal is to have in effect a viable emergency action plan. The hope is that it may never be needed.

Our society is so developed and complex that it is impossible to protect everything and everyone against everything. The possible threats are seemingly infinite. Risk is inevitable. For example, the only way to guarantee air safety is to keep all planes on the ground – clearly a price society is unwilling to pay.

¹ Emergency action plans today are often referred to in the business community as business continuity plans. For our purposes they are the same.

² Emergency action plans should not be viewed as a substitute for failure to exercise reasonable care to prevent the accident in the first instance. One report cautioned, “[T]he real effectiveness of a downstream warning system may be questionable and reliance on such systems may give a false sense of security to design engineers, dam owners, and residents below a dam.” COMMITTEE ON SAFETY CRITERIA FOR DAMS, WATER SCIENCE AND TECHNOLOGY BOARD, COMMISSION ON ENGINEERING AND TECHNICAL SYSTEMS, NATIONAL RESEARCH COUNCIL, SAFETY OF

Definitions of “emergency action plan” may vary,³ but the goal is to have in place preplanned emergency actions designed to minimize the extent and effects of a failure.

The number of ways an accident can occur, a facility fail, or system malfunction is probably infinite. Accidents happen. So too do disasters and tragedies.⁴ Disasters can be of natural, non-natural (human) or increasingly technological origin (often human in origin).

In spite of the best precautions, structures fail and systems malfunction. Airplanes crash, trains derail, ships sink, and vehicles collide. Petrochemical facilities, refineries, and manufacturing plants explode.⁵ Natural hazards include avalanches, blizzards, cold snaps, disease, drought, earthquake, fire, floods, heat waves, hurricanes, ice storms, landslides,

DAMS: FLOOD AND EARTHQUAKE CRITERIA 68 (1985) (hereinafter referred to as “*BLUE BOOK*”).

³ No unified definition of emergency action plan exists. For example, one definition in dam safety is, “a predetermined plan of action to be taken to reduce the potential for property damage and loss of lives in an area affected by a dam break.” *BLUE BOOK, SUPRA N. 1* at 302. A FEMA report states an emergency action plan can provide a systematic means to “identify emergency conditions . . . , expedite effective response actions to prevent failures” and reduce resulting losses. FEMA 145, DAM SAFETY: AN OWNER’S GUIDANCE MANUAL 69 (August 1987). Washington State provides that an emergency action plan is a formal, but simple, plan that identifies potential emergency conditions which could occur at a dam, and prescribes procedures to be followed to minimize loss of life and the potential for property loss. WASHINGTON STATE DEPARTMENT OF ECOLOGY, GUIDELINES FOR DEVELOPING DAM EMERGENCY ACTION PLANS, page 1 (Feb. 1995) (hereinafter referred to as “*WASHINGTON STATE*”).

⁴ As Judge Oakes notes:

‘Worst case’ accidents have a way of occurring - from Texas City to the Hyatt Regency at Kansas City, from the Tacoma Bridge to the Greenwich, Connecticut, I-95 bridge, from the Beverly Hills in Southgate, Kentucky, to the Cocoonut Grove in Boston, Massachusetts, and from the Titanic to the DC-10 at Chicago to the I-95 toll booth crash and fire - and that alone would end the case for many.

City of New York v. United States Department of Transportation, 715 F.2d 732, 753 (2nd Cir. 1983) (Oakes, J., dissenting). Another court wrote:

It may be that such a disaster could occur only upon a concatenation of circumstances of not too great probability, and that the odds are against it. It is common experience, however, that catastrophes occur at unexpected times and in unforeseen places A court of equity will not gamble with human life, at whatever odds, and for loss of life there is no remedy that in an equitable sense is adequate.

Harris Stanley Coal and Land Co. v. Chesapeake & Ohio Ry. Co., 154 F.2d 450, 453 (6th Cir.), cert. denied, 329 U.S. 761 (1946).

⁵ In general, see Caleb Solomon, *Volatile Situation: Rash of Fires at Oil and Chemical Plants Sparks Growing Alarm*, Wall Street Journal, November 7, 1989 at A1, col. 6, and *Toxins Abounding: Despite the Lessons of Bhopar, Chemical Accidents Are on the Rise*, Scientific American, July 1995 at 22.

lightning, tornadoes, volcanoes, tsunamis, wildfires, and wind. Electrical surges, perhaps caused by lightning, can blow through surge protectors and burn electrical equipment, including computers. Human acts can include basic negligence,⁶ pollution, computer hacking and viruses, deferred maintenance, disgruntled employees, sabotage,⁷ terrorism,⁸ vandalism, and bioterrorism in subways,⁹ office buildings,¹⁰ food supplies,¹¹ and public arenas. Environmental emergencies include air pollution, oil spills, toxic spills, and workplace accidents.

However, whether the cause of the emergency is of human or natural origin, or a combination of both, the impacts and results may be the same. While the threats may be infinite, the foreseeable damage, the resulting emergency, is finite.¹² Prompt implementation of an emergency action plan may minimize the damages, and avoid a disaster.¹³ Indeed, even with the total failure of a facility, emergency action plans can facilitate recovery efforts, not only at that site but also throughout the system or area.

⁶ Even simple negligence may have substantial consequences. For example, “an inaccurate work order led a crew to cut” three lines, thereby cutting off electricity to 2 million people in Los Angeles. Patrick McGreely, Paperwork Error Led to Massive L.A. Power Outage, Los Angeles Times, Sept. 16, 2005 at p. B1, col.5.

⁷ See e.g. Wheatland Irrigation Dist. v. McGuire, 537 P.2d 1128 (Wy. 1975) (holding that a landowner is not absolutely liable for damage resulting from extraordinary use of his land where the damage is caused by the malicious acts of a third party).

⁸ In general, see KEVIN M. QUINLEY AND DONALD L. SCHMIDT, BUSINESS AT RISK: HOW TO ASSESS, MITIGATE, AND RESPOND TO TERRORIST THREATS (The National Underwriter Company 2002) (hereinafter referred to as “*Business at Risk*”).

⁹ A cult in Japan released sarin, a nerve gas, in the Tokyo subway system on March 20, 1995, killing eight and injuring thousands. Lawrence K. Autman, The Poison: Nerve Gas That Killed Tokyo Subway Riders Said To Be One Of The Most Lethal kknown, New York Times, March 21, 1995 at P. A13, col.3. See also James Glanz & Randy Kennedy, *The Subways: Past Lessons Guide Transit for Attack*, N. Y. TIMES, Nov. 9, 2001, at B10, col. 1 (Nat. Ed.) (describing research related to potential chemical attacks on the New York subway).

¹⁰ NEWSWEEK, Nov. 5, 2001, at 36.

¹¹ See e.g. World Health Organization, Food Safety Department, Food Safety Issues: Terrorist Threats to Food: Guidance for Establishing and Strengthening Prevention and Response Systems (2002).

¹² For example, whether a dam fails because of a flood, earthquake, equipment failure, or terrorist act, the downstream threat is the same. Similarly, the causes of fires, whether residential, structural, or wildfire, do not vary from country to country. Arson is still arson, electrical shorts still electrical shorts, and bursts of lightning still an electrical surge. Subway bombings have the same impacts in London and Lisbon. The rules of thermodynamics are universal.

In addition, the onset of a major emergency may often be met with disbelief, followed rapidly by background noise, chatter, chaos, confusion, fear, hysteria, panic, and rumors,¹⁴ and then perhaps by indecision and paralysis. A major problem, especially at the beginning of the emergency, is information assessment, to cut through the fog, assess the situation, prioritize the response efforts, and marshal, deploy and track critical resources. Response efforts may often involve difficult judgment calls in rapidly unfolding, confusing scenarios where time is of the essence. An emergency action plan may facilitate these efforts.

One problem at the beginning of an emergency, as with contagion, is properly assessing the risk, such as diagnosing a disease. Modern modes of transportation, especially airplanes, can result in the spread of a pandemic before the threat is recognized.

Emergency action plans have not historically been the subject of much litigation or comment in the legal literature,¹⁵ but this quiescence is changing rapidly, especially with the

¹³ A maxim of firefighting is that large fires usually start out as small fires.

¹⁴ Instances of the confusion inherent in major disasters can be shown by the events of 9/11. Reporters afterwards commented on their recollections. Amy Morris in Washington, D.C. stated: “The rumors started to fly: The State Department had been car-bombed. The Old Executive Office Building had been hit. The Capitol was burning.” Tony Castrilli, also of Washington, stated: “We had reports that a car bomb had exploded at the State Department and that there was a fire at Union Station—even a report that the Gannett Tower in Arlington was burning. All this caused chaos at the news desk.” Bill Muller, a cameraman in New York City echoed these observations: “On the streets in Lower Manhattan, we weren’t getting any information from the assignment desk, so everything we learned came by word of mouth. We heard that ten planes had been hijacked and that one had hit Philadelphia, another Washington, then another, Camp David. We heard one had flown into the Sears Tower in Chicago and that California was also hit. One rumor was that the planes that had hit the towers were carrying anthrax or some other germs.” ALLISON GILBERT, *et al.*, COVERING CATASTROPHE: BROADCAST JOURNALISTS REPORT SEPTEMBER 11 145-146 (Bonus Books 2002).

¹⁵ See e.g. William C. Nicholson, *Legal Issues in Emergency Response to Terrorism Incidents Involving Hazardous Materials: The Hazardous Waste Operations and Emergency Response (“HAZWOPER”) Standard, Standard Operating Procedures and the Incident Management System*, 9 WIDENER LAW SYMPOSIUM J. 295 (2003) and Beth A. Henning, *EPCRA Emergency Plans: What to Consider Post-September 11*, 16 NAT. RES. & ENVIRONMENT 172 (Winter 2002). Most articles tend to be of a short, descriptive nature. See e.g. Rebecca Levy Sachs, *Disaster Planning and Recovery*, FOR THE DEFENSE 45 (October 2001 (discussing the elements of an effective disaster recovery plan); Paul Burnstein, *Loss and Recovery*, TRIAL 59 (December 2001) (suggesting methods of protecting data from a potential disaster); and Virginia Grant, *Emergency Action Planning for Law Firms: What to Do Before and After Disaster Strikes*, LAW FIRM PARTNERSHIP AND BENEFITS REPORT, Sept. 2001, 7 No. 8LFPBR 1 (WESTLAW). As for issues of potential government liability or immunity in emergency responses, see Ken Lerner, *Governmental Negligence Liability Exposure in Disaster Management*, 23 THE URBAN LAWYER 333 (1991).

civil liability issues present in responses to bioterrorism and contagion. Despite the seeming judicial novelty of EAP's, the legal principles applicable to them easily fit into the established law of negligence.

Liability issues can arise in three contexts: 1) absence of an emergency action plan; 2) inadequacy of the plan; and 3) failure to follow the plan. All three should be subject to the general negligence standard of reasonable care under the circumstances.

NEGLIGENCE

Negligence is a rich, multi-layered, heavily nuanced subject. To simplify negligence does it a grave injustice. However, basic principles of negligence law readily apply to the analysis of emergency action plans.

The essence of negligence is the failure to exercise reasonable care under the circumstances. It is based upon the reasonable foreseeability of the risk.¹⁶ Negligence can equally lie in malfeasance or nonfeasance.¹⁷ The failure to act in the first instance is as culpable as affirmative misconduct. Indeed, much of negligence liability consists of a failure to exercise reasonable care to either prevent or minimize foreseeable risks.

An excellent practical study on contingency planning for business is John Laye, *AVOIDING DISASTER: HOW TO KEEP YOUR BUSINESS GOING WHEN CATASTROPHE STRIKES* (2002)(hereinafter referred to as "*Laye*"). His emphasis is on business continuity, which greatly overlaps the basic premises of emergency action planning.

¹⁶ *Charvoz v. Bonneville Irr. Dist.*, 235 P.2d 780, 783 (Utah 1951)

¹⁷ Indeed, one of the germinal negligence cases, *Blyth v. Birmingham Waterworks Co.*, 11 Ex. 781, 784, 156 Eng. Rep. 1047 (1856), defined negligence as "the omission to do something which a reasonable man, guided upon those considerations which ordinarily regulate the conduct of human affairs, would do, or doing something which a prudent and reasonable man would not do." More recently, the New Jersey Supreme Court stated, "To act non-negligently is to take reasonable precautions to prevent the occurrence of reasonable harm to others." *Weinberg v. Dinger*, 524 A.2d 336, 374 (N.J. 1987). Liability can arise in a wide variety of circumstances, such as the failure to warn with unavoidably unsafe products, *RESTATEMENT (SECOND) OF TORTS* § 402A, Comment K (1965), or failing to anticipate a foreseeable intervening cause. William L. Prosser & W. Page Keeton, *THE LAW OF TORTS* 303 (5th Ed. 1984)(hereinafter referred to as "*Prosser & Keeton*").

The essence of reasonable care was set out by Judge Learned Hand in *United States v. Carroll Towing Co.*¹⁸ as a calculus of three factors: the probability of an accident occurring, the gravity of the resulting injury, and the burden of adequate precautions.¹⁹

A corollary to this basic analysis is that as the risk increases, so too does the standard of care. As stated by Prosser and Keeton:

[I]f the risk is an appreciable one, and the possible consequences are serious, the question is not one of mathematical probability alone. The odds may be a thousand to one that no train will arrive at the very moment that an automobile is crossing a railway track, but the risk of death is nevertheless sufficiently serious to require the driver to look for the train and the train to signal its approach . . . As the gravity of the possible harm increases, the apparent likelihood of its reoccurrence need be correspondingly less to generate a duty of precaution.²⁰

An example of this premise occurs in dam safety with respect to emergency spillway capacity. Meteorologists can estimate the probable maximum precipitation (PMP), which is “Theoretically, the greatest depth of precipitation for a given duration that is physically possible over a given size storm area at a particular geographical location at a certain time of the year.”²¹

¹⁸ 159 F.2d 169 (2nd Cir. 1947)

¹⁹*Id.* at 173. *See also* Conway v. O’Brien, 111 F.2d 611, 612: “The degree of care demanded of a person by an occasion is the resultant of three factors: The likelihood that his conduct will injure others, taken with the seriousness of the injury if it happens, and balanced against the interest which he must sacrifice to avoid the risk. All these are practically not susceptible of any quantitative estimate, and the second two are generally not so, even theoretically. For this reason a solution always involves some preference, or choice between incommensurables, and it is consigned to a jury because their decision is thought most likely to accord with commonly accepted standards, real or fancied.”

²⁰ PROSSER & KEETON, *supra* n. 14 at 171. (Let us add that the railroad’s duty will often include posting warning signs and installing crossing gates.). This principle goes back to the germinal negligence case in the United States, Brown v. Kendall, 60 Mass. (6 Cush.) 292 (1850) (“[W]hat constitutes ordinary care will vary with the circumstances of the case.”). *See also* Erickson v. Bennion 503 P.2d 139, 140-141 (Utah 1972); Willie v. Minnesota Power and Light Co., 250 N.W. 809 (Minn. 1933); City Water Power Co. v. City of Fergus Falls, 128 N.W. 817, 818 (Minn. 1910); Herro v. Board of County Road Commission for County of Chippewa, 118 N.W.2d 271 (1962); Dover v. Georgia Power Co., 168 S.E. 117, 118 (Ga. Ct. App. 1933); Mackay v. Breeze, 269 P. 1026, 1027 (Utah 1928); Erickson v. Bennin, 503 P.2d 139, 140-141 (Utah 1972).

²¹ Committee on Safety Criteria for Dams, NATIONAL RESEARCH COUNCIL SAFETY OF DAMS: FLOOD AND EARTHQUAKE CRITERIA 304 (1985).

The PMP is obviously a rare event, but extreme precipitations have been recorded.²² The PMP in conjunction with hydrologic charts can in turn be used to calculate the probable maximum flood (PMF). The potential consequences of a major dam breach are such that the Army Corps of Engineers recommends an emergency spillway capacity sufficient to pass ½ of the PMF for high hazard dams,²³ while some states require a spillway capacity of the full PMF.

The standard of care may be established by case law, statutes,²⁴ regulations,²⁵ and contracts,²⁶ as well as by industry, professional²⁷ and building codes.²⁸ These measures will

²² For example, 26 inches of rain fell in the San Gabriel Mountains in a 24 hour period in January 1943. John McPhee, *The Control of Nature* 214 (1989). In general, see John Harrison, PMP's Never Happen – Or Do They? 18 ASDSO Newsletter No. 6 at 14 (Nov./Dec. 2002). Similarly, on July 31, 1976 a thunderstorm hovered over Big Thompson Canyon in Colorado. At least ten inches of rain dropped into the canyon in a three-hour period. The resulting flood in the steep, narrow canyon killed 139.

²³ The Corps assesses spillway capacity and hazards in relation to the risk, measured by the size of the dam and the potential downstream loss of life. Office of the Chief of Engineers, U.S. Army Corps of Engineers, Final Report to Congress, National Program of Inspection of Non-Federal Dams, The National Dam Inspection Act of 1972, Sec. 5, Pub. L. No. 92-367 B9 (1982). *See also* n. 141, *infra*. For a representative listing of PMP's, *see* J.F. Miller, E.M. Hansen, D.D. Fenn, L.C. Schreiner & T. Jensen, PROBABLE MAXIMUM PRECIPITATION ESTIMATES- UNITED STATES BETWEEN THE CONTINENTAL DIVIDE AND THE 103RD MERIDIAN (U.S. Dept.'s Of Commerce, Army and Interior Hydrometeorological Report No. 55, March 1984). *In general, see* Federal Emergency Management Agency, Proceedings of Probable Maximum Flood Workshop (1970).

²⁴ Violations of a statute or ordinance may constitute negligence. *Burran, Jr. v. Dambold*, 422 F.2d 133 (10th Cir. 1970); *Henry v. Britt*, 220 So.2d 917 (Fla. Ct. App. 1969).

²⁵ *Henry v. Britt*, 220 So.2d 917, 920 (Fla. Dist. Ct. App. 1969). Of course, a plan which does not conform to statutory or regulatory requirements will fail. For example, the Iowa Beef Processing Co. had a "disaster readiness plan" in effect for its Council Bluffs, Iowa, plant. This plan provided for immediate evacuation in case of a major ammonia leak. The readiness plan was an alternative to an emergency action plan. 29 C.F.R. §1910.120 (q)(1) (2002). The employees were trained to evacuate immediately. However, when a major ammonia leak occurred on June 30, 1993, two employees, only one of which was wearing a self-contained breathing apparatus, attempted to rescue a downed employee of a sub-contractor. Because the plan provided for rescues as well as evacuations, it did not qualify for an exception from the requirement to prepare a more detailed emergency action plan. *See IBP, Inc. v. Iowa Employment Appeal Bd.*, 604 N.W.2d 307 (Iowa 1999).

²⁶ "The principle which seems to have emerged . . . is that there will be liability in tort for misperformance of a contract whenever there would be liability for gratuitous performance without the contract – which is to say, whenever such misperformance involves a foreseeable, unreasonable risk of harm to the interests of the plaintiff." *Prosser & Keeton, supra* note 14, at 602.

²⁷ An example of a professional code is National Fire Protection Association, NFPA 1600 Standard on Disaster/Emergency Management and Business Continuity Programs (2000 Ed.) http://www.nfpa.org/Codes/NFPA_Codes_and_Standards/listof_nfpa_documents/nfpa_1600.asp. NFPA 1600 contains provisions on Hazard Identification and Risk Assessment (3-3), Hazard Mitigation (3-4), Resource Management (3-5), Planning (3-6), Direction, Control, and Coordination (3-7), Communications and Warning (3-8), Operations and Procedures (3-9), Logistics and Facilities (3-10), Training (3-11), Exercises, Evaluations, and Corrective Actions (3-12), Crisis Communications, Public Education, and Information (3-13), and Finance and

usually establish the minimum standard of care. The actor will be held to a higher standard, the common law duty of reasonable care, if they are inadequate.²⁹

Parenthetically, the issue is not whether a similar event has occurred before, but the foreseeability of the risk that this particular mishap may occur. Standard negligence analysis requires the exercise of reasonable care to prevent an accident. Liability may exist if reasonable design,³⁰ construction,³¹ operation,³² inspection,³³ or maintenance procedures³⁴ should have anticipated and prevented or minimized the failure.

The test is one of reasonable foreseeability. Even if a fire had never struck this apartment building before, smoke detectors, operational fire escapes, and sprinklers are required in multi-

Administration (3-14). The standard requires not only a plan but also that businesses fund it (Id. at §3-14). NFPA 1600 was approved by the American National Standards Institute on February 11, 2000 as an ANSI Standard. *Id.* at 1600-1. The National Fire Protection Association prepares standards for fire fighting and protection. ANSI Standards are in a sense purely advisory, but they are often admissible as evidence of the reasonable standard of care. *See e.g.* Hansen v. Abrasive Engineering & Manufacturing Co., 856 P.2d 625 (Ore. 1993) (holding that the advisory safety standards of the American National Standards Institute may be considered in deciding whether defendant has met the standard of care); Arkansas Valley Elect. Coop. Corp. v. Davis, 800 S.W.2d 420, 422 (Ark. 1990) (holding that defendant's violation of the national electric safety code can be used as evidence of negligence); Norman v. Ogallala Pub. School Dist., 609 N.W. 2d 338 (Neb. 2000); Kent Village Associates Joint Venture v. Smith, 657 A.2d 330 (Md. App. 1995). *See also*, Miller v. Yazoo Mfg. Co., 26 F.3d 84 (8th Cir. 1994).

²⁸ *See e.g.* FLA. STAT. ANN. §553.84, Burran v. Dambolo, 422 F.2d 133, 135-136 (10th Cir. 1970) (holding that building codes create standard of care); St. Joseph Hospital v. Corbetta Construction Co., 316 N.E.2d 51, 61-62 (Ill. Ct. App. 1974) (holding that violation of building code creates cause of action); Virginia Elec. & Power Co. v. Savoy Const. Co., 294 S.E.2d 811, 817 (Va. 1982) (holding that violation of building code creates negligence per se).

²⁹ *See e.g.* Alvarado v. J.C. Penney Co., Inc., 737 F.Supp. 371, 374 (D. Kan. 1990); Gryc v. Dayton Hudson Corp., 197 N.W.2d 727 (Minn. 1980); Dawson v. Chrysler Corp., 630 P.2d 950 (3rd Cir. 1980); Helling v. Carey, 519 P.2d 981 (Wash. 1974); The T. J. Hooper, 60 F.2d 737 (2nd Cir. 1921); Clark's Adm'r v. Kentucky Utility Co., 158 S.W.2d 134, 137 (Ky. 1941); A.L.I., Restatement of Torts (2nd) §288C.

³⁰ *See e.g.* Barr v. Game, Fish and Parks Commission, 497 P.2d 340 (Col. Ct. App. 1972).

³¹ The concept of liability for construction defects long precedes the common law, going back to the hallowed Code of Hammurabi, which provided that in the case of "a house being so carelessly built as to cause death to the owner's son," the builder's son was to be put to death. Gibson B. Witherspoon, ARCHITECTS' AND ENGINEERS' TORT LIABILITY, 16 D.L.J. 409 (1967).

³² *See e.g.* Gutierrez v. Rio Rancho Estates, Inc., 605 P.2d 1154 (N. Mex. 1980) and Bruton v. Carolina Power and Light Co., 6 S.E.2d 822 (N.C. 1940).

³³ *See e.g.* Ingram v. Howard-Needles-Tammen & Bergendoff, 672 P.2d 1083 (Kan. 1983).

³⁴ Curtis v. Dewey, 475 P.2d 808 (Idaho 1970); Hayashi v. Alameda County Flood Control and Water Conservation District, 343 P.2d 1048 (Cal. Ct. App. 1959); Bowling v. City of Oxford, 148 S.E.2d 624 (N.C. 1966); Carlson v.

unit dwellings. The same standard for foreseeability applies to natural risks. The practical effect of 9/11 effectively broadened the reasonable foreseeability of risks caused by the intentional misdeeds of others.³⁵

Natural phenomena, such as storms and earthquakes, are random events, which may or may not be predictable in striking a specific geographic area at a known time in the future.³⁶ Some areas may escape unscathed from severe natural forces for millennia, whereas, for example, tornados will frequently touch down in “Tornado Alley.”³⁷ Geologic, hydrologic or meteorologic quiescence may impart a spirit of complacency. Obviously though, architects and engineers of major structures in San Francisco or Los Angeles should use design criteria to minimize the risk of structural failures from earthquakes, even if the “Big One” never occurs.³⁸ So too should the Southeast with hurricanes.

A&P Corrugated Box Corp., 72 A.2d 290 (Pa. 1950).

³⁵ On February 23, 1997 a Palestinian killed one tourist and wounded five when he started shooting on the observation deck of the Empire State Building. Plaintiff’s claimed negligence in the failure to install metal detectors and institute a program. *Gross v. Empire State Bldg. Assocs.*, 229 N.Y. L.J., Feb. 23, 2003 at 21, Col. 2 (Sup. Ct. N.Y.).

See also, *San Luis Obispo Mothers for Peace v. Nuclear Regulatory Commission*, 449 F.3d 1016 (9th Cir. 2006) (NEPA requires consideration of the risks of a terrorist attack in an environmental impact statement for a nuclear power plant).

³⁶ Some natural phenomenon, such as earthquakes and tornados, may be highly foreseeable in specific geographic regions, but can in fact strike anywhere in the United States. Others, such as volcanoes, are confined to specific sites, but their effects can be felt worldwide. Blizzards, hurricanes, ice storms, tornados, and lightning are natural occurrences in much of the country. Even when hurricanes or tornados are observed, meteorology still cannot predict when or where they will touch land.

³⁷ “Tornado Alley” is the nickname for the tornado prone midsection of the United States, ranging from Texas through the Upper Midwest, and from Oklahoma to the Southeast.

³⁸ The “Big One” is an earthquake of magnitude 8.0 or higher occurring along the San Andreas Fault. However, even though California receives most of the publicity regarding earthquakes in the United States, the reality is that every state is susceptible to earthquakes. Three of the largest earthquakes in American history occurred on the New Madrid Fault, near Memphis, during the 1811-1812 winter. U. S. General Accounting Office, *Federal Buildings: Many Are Threatened by Earthquakes, but Limited Action Has Been Taken* 15 (May 1992).

The reasonable foreseeability of these risks creates a duty³⁹ to employ reasonable care to reduce the risks of a disaster. The duty of reasonable care extends to those foreseeably injured by the negligence, and not just those in privity of contract with the defendant.⁴⁰ Even inspectors, who are neither in a relationship to the victims nor operating a facility, may be liable for negligence for failure to discover the problems.⁴¹ Liability thus extends to any person who foreseeably is at risk through the failure to exercise reasonable care.

For example, the 9/11 aviation defendants owed a duty both to their passengers and the victims on the ground.⁴² The screening activities at Logan, Newark, and Dulles Airports “were for the protection of people on the ground’ as well as the passengers on the hijacked airplanes.”⁴³

³⁹ Indeed, an OSHA guideline recognizes EAP’s “should address emergencies that the employer may reasonably expect in the workplace,” including fire, toxic chemical releases, hurricanes, tornadoes, blizzards, and floods. 29 C.F.R. §1910.38, Appendix to Subpart E (2002).

⁴⁰ *See e.g.* Navajo Circle, Inc., v. Development Concepts, 373 So. 2d 689 (Fla. Ct. App. 1979), where a condominium association and a unit owner were allowed to seek damages to the roof and the exterior walls from the architect for negligently supervising the construction and subsequent repairs of the roof, and also from the contractor for negligently constructing the roof. *See also* Kristek v. Catron, 644 P.2d 480 (Kan. App. 1982) (contractor liable to a third party); Seiler v. Levitz Furniture Co., 367 A.2d 999 (Del. 1976) (liability of architect/engineer to tenant); Heigh v. Wadsworth, 361 P.2d 849 (Okl. 1961) (contractor liable to purchaser's tenant); Waldor Pump & Equipment Co. v. Orr-Schelen-Meyerson & Co., 386 N. W.2d 375 (Minn. App. 1986); Montijo v. Swift, 33 Cal. Rptr. 133 (Cal. App. 1963); Lumber Products, Inc. v. Hiriart, 255 So.2d 783, 787 (La. Ct. App. 1971); S.K. Whitty & Co., Inc. v. Laurence L. Lambert & Assoc., 576 So.2d 599 (La. Ct. App. 1991); Evans v. Howard R. Green Co., 231 N.W.2d 907, 913 (Iowa 1975); Mudgett v. Marshall, 574 A.2d 867 (Me. 1990); Miller v. DeWitt, 208 N.E.2d 249, 284 (Ill. App. 1965) (“The architects may be liable for negligence in failing to exercise the ordinary skill of their profession, which results in the erection of an unsafe structure whereby anyone lawfully on the premises is injured.”) In terms of measuring the potential liability to third parties, the court in Coburn v. Lenox Homes, Inc., 441 A.2d 620, 624 (Conn. 1982) stated:

A duty to use care may arise from a contract, from a statute, or from circumstances under which a reasonable person, knowing what he knew or should have known, would anticipate that harm of the general nature of that suffered was likely to result from the act or failure to act.

⁴¹ *See e.g.* Ingram v. Howard-Needles-Tammen & Bergendorff Corporation, 672 P.2d 1083 (Kan. 1983); Phillips v. United States, 801 F. Supp. 337, 348 (D. Idaho 1992), *aff’d* 15 F.3d 1088 (9th Cir.); Johnson v. Burley Irrigation Dist., 304 P. 2d 912, 915 (Idaho 1956)(existence of gophers should have been discovered through an inspection); Ayala v. Boston Housing Authority, 404 Mass. 689, 705 (1989).

⁴² In Re September 11 Litigation, 280 F.Supp.2d 279, 292 (S.D. N.Y. 2003).

⁴³ *Id.* at 293.

A cause of action was also stated against Boeing for manufacturing inadequate and defective cockpit doors.⁴⁴

The duty to prepare emergency action plans is a logical extension of this principle. Plans to respond to disasters are just as critical in minimizing the resulting damages as reasonable steps to prevent an accident.

The law's interest in minimizing the costs of an accident is shown by a number of well-established liability scenarios, such as products liability and safety measures. For example, a large body of products liability litigation in automobile accidents involves the "second collision." Regardless of the cause of the original accident, perhaps even a drunken driver, the victim claims a safer design of the vehicle would have prevented or reduced the resulting injuries.⁴⁵ Liability is not imposed for causing the accident, but for failure to minimize the resulting damages foreseeable to the manufacturer.⁴⁶

Analogous issues often arise in causation analysis when defendant claims no liability should extend for an intervening cause, especially an intervening criminal act.⁴⁷ This argument will often fail though, either because the intervening act itself is foreseeable,⁴⁸ or on the premise

⁴⁴ *Id.* at 304.

⁴⁵ *See e.g.* D'Amario v. Ford Motor Co., 806 So. 2d 424 (Fla. 2001); Alami v. Volkswagen of Am., Inc., 766 N.E. 2d 574 (N.Y. 2002)(even in these cases evidence of intoxication and failure to wear seat belts was held inadmissible as unduly prejudicial); Mercurio v. Nissan Motor Corp., 81 F. Supp. 2d 859 (N.D. Ohio 2000); *see also*, Regions Bank v. BMW North America, Inc., 406 F. 3d 978 (8th Cir. 2005).

⁴⁶ *See e.g.* Dawson v. Chrysler Corp., 630 P.2d 950 (3rd Cir. 1980).

⁴⁷ Courts are split if an intervening criminal act supercedes any negligence by the target, such as an alleged failure to foresee the criminal acts. Courts have reached conflicting results. For example, liability to foresee intervening criminal acts existed in *Butler v. Acme Mkts., Inc.*, 445 A. 2d 1141 (N.J.1982) (supermarket parking lot); *Jacqueline S. v. City of New York*, 598 N.Y.S. 2d 160 (Ct. App. 1993) (common law duty to take minimal precautions to protect tenants from foreseeable harm). California is the leading state to the contrary, relying upon "prior similar acts" *Ann M. v. Pacific Plaza Shopping Center*, 25 Cal. Rptr. 2d 137 (1993); *Wiener v. Southcoast Children Center, Inc.*, 12 Cal. Rptr. 3d 615 (2004) (driver intentionally drove into child care facility, killing two); *Kadish v. Jewish Community Centers of Greater Los Angeles*, 5 Cal. Rptr. 3d 394 (Ct. App. 2003), dismissed 18 Cal. Rptr. 3d 411 (2004).

⁴⁸ *See e.g.* McFeeters v. Renollet, 500 P.2d 47, 52 (Kan. 1972); *Johnson v. Kosmos Portland Cement Co.*, 64 F.2d

that if the result is foreseeable, then the defendant is liable, regardless of how the intervening cause came about.⁴⁹ Thus intervening criminal acts may not supercede the negligence of the defendant.⁵⁰ Even terrorist acts may be foreseeable, and can be averted or prepared for.⁵¹

By way of analogy, governments and telecommunications companies have established “911” or “9-1-1” as an emergency, toll-free telephone number to report emergencies and facilitate timely response efforts. 911 is in fact one form of emergency preparedness, response, and action planning. The city, town, or county is not usually the cause of the emergency, which may be a criminal act. However, liability has occasionally been imposed against a government entity for negligence in responding to the emergency 911 call.⁵²

The common law developed the Act of God defense whereby a defendant would not be liable for an event or act outside human contemplation, such as a catastrophic storm. If the storm is beyond human capacity to anticipate, then liability will not lie.⁵³

193, 197 (6th Cir.), *cert denied* 290 U.S. 641 (1933); *Tex-Jersey Oil Corp. v. Beck*, 292 S.W.2d 803, 804 (Tex. Ct. App.-Texarkana 1956), *aff’d in part and rev’d in part*, 305 S.W.2d 162 (Tex. 1957); *McKinley v. Hines*, 215 P. 301 (Kan. 1923).

⁴⁹ See *PROSSER & KEETON, supra* n. 14 AT 303-306; DAN B. DOBBS, *THE LAW OF TORTS* 476-481 (2000).

⁵⁰ See *e.g.* *Yukon Equipment, Inc. v. Fireman’s Fund Insurance Co.* 585 P.2d 1206 (Alaska 1978). This premise often arises in imposing liability on the owners and occupants of land for intervening criminal acts. See *e.g.* *Kline v. 1500 Massachusetts Ave. Apartment Corp.*, 439 F.2d 477 (D.C. Cir. 1970); *Holly v. Mt. Zion Terrace Apts.*, 382 So.2d 98 (Fla. 1980); *Trentacost v. Brussel*, 412 A.2d 436 (N.J. 1980); *Seibert v. Vic Regnier Building, Inc.*, 856 P.2d 1332 (Kan. 1993)(attack in poorly lit, underground garage); *McClung v. Delta Square Ltd. P’ship.*, 937 S.W.2d 891 (Texas 1996); *contra, see Ann M. v. Pacific Plaza Shopping Center*, 25 Cal. Rptr.2d 137 (1993).

⁵¹ In general, see *BUSINESS AT RISK; supra* n. 6. Indeed, California’s Department of General Services is charged with developing business interruption plans for a variety of scenarios, including acts of terrorism. Cal. Gov’t. Code §8549.20(a)(2). New York State is planning to create the nation’s first statewide alert system to alert every practicing physician in the state of suspected biological or chemical attacks and other public health emergencies. E-mail and a web site will be utilized to get the warnings out in six minutes after notification of the emergency to the state. Lydia Polgreen, *New York State: Plan to Alert Doctors in Case of Terror Attacks*, N. Y. Times, Dec. 19, 2002 at A16, col. 3 (Nat. Ed.).

⁵² See *Chambers-Castanes v. King County*, 669 P.2d 451 (Wash. 1983); *Barth by Barth v. Board of Education*, 490 N.E.2d 77 (Ill. Ct. App. 1986); *DeLong v. Erie County*, 455 N.Y.S.2d 887 (App. Div. 1982); See also, *Harrell v. City of Chicago Heights*, 945 F. Supp. 1112 (N.D. Ill. 1996); *Contra, see Eastburn v. Regional Fire Protection Authority*, 7 Cal. Rptr. 552 (2003); *Beltran v. City of El Paso*, 367 F. 3d 299 (5th cir. 2004).

⁵³ See *e.g.* *Golden v. Amory*, 109 N.E.2d 131, 133 (Mass. 1952); *Sutliff v. Sweetwater Water Co.*, 186 P.76 (Cal. 1920).

However, critical limitations exist to the Act of God defense.⁵⁴ First, it does not apply to normal climatic conditions, or even foreseeable events. Normal weather patterns are foreseeable.⁵⁵ Just as critically, the defense fails if an “Act of God” coalesces with a human act of negligence.⁵⁶ Reasonable steps must be taken to minimize foreseeable risks.⁵⁷

The failure to plan for emergencies is shown by litigation arising out of the 1993 World Trade Center bombing.

On February 26, 1993 a truck bomb exploded in the underground public parking garage of the World Trade Center, killing six, and injuring scores. The Port Authority of New York and New Jersey had created a terrorist planning and intelligence section, which submitted a report in 1984. Other reports, stories, and recommendations followed. The vulnerability of the parking garage received several recommendations for improved security. These recommendations were not implemented.

Plaintiffs asserted negligence against the Port Authority.⁵⁸ Defendant’s defenses included the lack of foreseeability of the bombing as a matter of law.⁵⁹

Defendant’s claim that the risk was unforeseeable was viewed as a question of fact for the jury.⁶⁰ The duty is to provide minimal security precautions against reasonably foreseeable

⁵⁴ Fairbury Brick Co. V. Chicago, R.I. & P.R. Co., 113 N.W. 933, 937 (1907); Anderson v. Highland Lake Co., 258 S.W. 218 (Tex. Ct. Civ. App. 1924); Webb v. Platte Valley Public Power & Irr. Dist., 18 N.W.2d 563 (Neb. 1945).

⁵⁵ See PROSSER & KEETON, SUPRA N. 14 AT §44, p. 304 (5th ed. 1984), and the cases in Denis Binder, *Act of God? Or Act of Man?: A Reappraisal of the Act of God Defense in Tort Law*, 15 THE REV. OF LIT. 1, 28-29 (1996) (hereinafter referred to as “Act of God”).

⁵⁶ See e.g. Polack v. Pioghe, 35 Cal. 416 (1863), and the extensive list of authorities in *Act of God, supra*, n. 47 at 13-22. See especially the classic case of Wald v. Pittsburgh, C.C. & St. L. R.Co., 44 N.E. 888 (1896). (Plaintiff’s misshipped trunk was the only liability arising out of the tragic Johnstown, Pennsylvania, Flood on May 31, 1889, in which 2209 victims died when the South Fork Dam burst 14 miles above Johnstown, Pennsylvania. Jackson, *When 20 Million Tons of Water Flood Johnstown*, SMITHSONIAN, May 1989 at 50. See also Barr v. Game, Fish & Parks Commission, 497 P.2d 340 (Colo. Ct. App. 1972).

⁵⁷ *Act of God, supra* n. 54 at 42-49.

⁵⁸ In the matter of the World Trade Center Bombing, 776 N.Y.S. 2d 713 (Sup. Ct. 2004).

criminal acts.⁶¹ The Port Authority had a legal duty to exercise reasonable care to maintain the premises in a reasonably safe condition.⁶²

However, foreseeability includes both “what the landlord actually knew and what it reasonably should have known,”⁶³ a variation of the known or reasonably should have known standard for negligence. In light of that foreseeability, this proper level of safety measures is a question of fact. Echoing Palsgraf, the Court focused the inquiry “on what risks were reasonably to be perceived.”⁶⁴ The Port Authority’s own acts regarding the risk of a terrorist attack on the WTC demonstrates the perceived risk.⁶⁵

An important caveat to negligence analysis is that liability will not exist simply because an accident occurred; that would in fact be strict liability

APPLICATION OF THE NEGLIGENCE STANDARD

THE DUTY TO PREPARE A PLAN

We can rephrase Judge Hand’s factors as follows:

- 1) How likely is an emergency to occur?
- 2) What are the potential consequences should it occur?
- 3) What safety precautions are available?

⁵⁹ *Id.* at 726.

⁶⁰ *Id.* at 734.

⁶¹ *Id.*

⁶² *Id.*

⁶³ *Id.*

⁶⁴ *Id.* at 735

⁶⁵ *Id.* at 736

In terms of Judge Learned Hand's basic factors for negligence analysis, the ease of preparing and periodically updating an emergency action plan will often outweigh the risk of not doing so.⁶⁶

If we apply the first of these three factors to the potential failure of a large structure, such as a dam, the risk of failure is low.⁶⁷ No human activity is risk – free. However, the potential magnitude, the second factor, may be quite large.⁶⁸

For example, the potential damages and losses⁶⁹ can include loss of life, personal injuries, emotional distress (including post traumatic stress syndrome), property damage, infrastructure losses, loss of utility services, business interruption and loss of industry, insurance,⁷⁰ commercial and habitation, loss of use of facility and resulting losses to the beneficial users of the facility, including water supply, flood control, irrigation, navigation, recreational uses and hydroelectric power, as well as disaster relief,⁷¹ cleanup and recovery costs, public health and sanitation

⁶⁶ In the case of a dam failure, for example, the class of foreseeable victims could include the resident population, tourists, travelers, recreational users, workers, commercial enterprises, utilities, and government entities, sureties, and lenders. Foreseeable legal damages could include wrongful death, loss of consortium, personal injury, and emotional distress. *See e.g. Prince v. Pittston Co.*, 63 F.R.D. 29 (S.D.W.Va, 1974).

⁶⁷ As September 11 showed, though, while the risks may have been low, they were not non-existent. As one government dam safety document states: “The probability of failure may be small, but is not nonexistent. An emergency action plan may minimize the extent and effects of a failure.” U.S. DEPT. OF THE INTERIOR, NATIONAL PARK SERVICE, GUIDELINE NPS-40: RELEASE NO. 1, DAMS AND APPURTENANT WORKS MAINTENANCE, OPERATION AND SAFETY, ch. 6, p. 12 (Feb. 1983). Indeed, sometimes a backup to a primary response center may be needed. New York's \$13 million emergency bunker was on the 23rd floor of 7 World Trade Center. The collapse of the Twin Towers and adjoining buildings forced New York City to scramble to put together a new emergency operations center. Al Baker & Kevin Flynn, *After a Bunker Proves Vulnerable, Officials Rethink Emergency Response*, N.Y. TIMES, Sept. 29, 2001, at A9, col. 1 (Nat. Ed.).

⁶⁸ Eleven lives were lost on June 9, 1976, 25,000 people were left homeless, and 300 square miles inundated when the Teton Dam failed on its initial filling. The reservoir contained 250,000 cubic acre feet (cfs) of water at the time of failure. The peak discharge was 1,000,000 cfs. Congress appropriated \$400 million to compensate the victims. Pub. L. No. 94-100, 90 Stat. 1211. *See Aetna v. United States*, 628 F.2d 1201 (9th Cir. 1980) (sovereign immunity).

⁶⁹ Outside the ambit of this article are the taxation consequences of emergencies. *In general, see* Francine J. Lipman, *Anatomy of a Disaster Under The Internal Revenue Code*, 6 Fla. Tax Rev. 953 (2005).

⁷⁰ *See e.g. Zurich Am. Ins. Co. v. ABM Ind., Inc.*, 397 F. 3d 158 (2nd cir. 2005); *Laua Trading Inc. v. Hartford Fire Ins. Co.*, 365 F. supp. 2d 434 (S. D. N. Y. 2005); *SR International Bus. Ins. Co., LTD. V. World Trade Center Properties, LLC*, 394 F. supp. 2d 585 (S. D. N. Y. 2005); *Industrial Risk Insurance v. Port Authority of New York and New Jersey*, 387 F. supp. 2d 299 (S. D. N. Y. 2005); *United Airlines, Inc. v. Insurance Co. of the State of PA.*, 385 F. supp. 2d 343 (S. D. N. Y. 2005).

⁷¹ For example, the Robert T. Stafford Disaster Relief and Emergency Assistance Act (Stafford Act) authorizes

problems,⁷² water pollution and toxic contaminations, repair and reconstruction, unemployment, workers compensation, environmental damages, fish, wildlife and vegetation losses, cultural resources, revenue losses, and even political losses.⁷³

Emergency action plans easily fit into the third factor of the Hand analysis. First, even though emergency action plans may have received little judicial scrutiny so far,⁷⁴ they are far from a novel concept. The ease and cost of preparing an emergency action plan is facilitated by the fact that sample emergency action plans are available from several agencies.⁷⁵

FEMA to administer individual (not business) relief efforts for five discrete areas in Presidential declared emergencies:

1. Temporary Housing Assistance;
2. Individual and Family Grants;
3. Crisis Counseling;
4. Unemployment Assistance; and
5. Legal Services.

Temporary housing assistance may include mortgage and rental assistance and limited home repairs, transient accommodations, and manufactured housing. Individual and family grants can include expenses for real and personal property, medical and dental expenses, funeral expenses, transportation needs, and other needs. Pub. L. No. 100-707, 102 Stat. 4689.

⁷² In general, see Eric K. Noji, *Medical and Public Health Consequences of Natural and Biological Disasters*, *Natural Hazards Review* 143 (August 2001).

⁷³ John Laye recounts a series of political repercussions for poor responses to emergencies, including reelection defeats by the mayors of San Francisco (1989 Loma Prieta Earthquake) and Seattle (1999 World Trade Organization Riots). *Laye, supra* n. 12 at 29.

⁷⁴ See *Bluestone Emergency Design, Inc. v. Federal Energy Regulatory Commission*, 74 F.3d 1288 (D.C. Cir. 1996); *IBP, Inc. v. Iowa Employment Appeal Board*, 604 N.W.2d 307 (Iowa 1999); *Engle v. West Penn Power Co.*, 598 A.2d 290 (Pa. Super. Ct. 1991). In a few cases, the emergency action plan is simply a tangential aspect of the case. See e.g. *Avery v. City of Indianapolis*, 2000 WL 1469361 (S.D. Ind. 2000). Of course, reasonable care should be exercised in a training exercise. See *Miskovich v. Independent School Dist.* 318, 226 F. Supp. 2d 990 (D. Minn. 2002).

Of peripheral interest is *DFDS Seacruises (Bahamas) Ltd. v. United States*, 676 F.Supp. 1193 (S. D. Fla. 1987), which held the Coast Guard was not liable for failing to establish a shipboard firefighting contingency plan. The suit was brought under the Federal Torts Claim Act, 28 U.S.C. §2680(a)(1994), and thus subject to the discretionary function exception, which precludes liability when the government agency is engaged in an act of discretion. The court stated: "However desirable such contingency planning may be, decisions as to whether, where and when to expend time and resources to develop such plans are entrusted to the Coast Guard's judgment and are not reviewable" 676 F.Supp. at 1205.

⁷⁵ FEMA publishes a Model State Dam Safety Program, prepared by the Association of State Dam Safety Officials. See FEDERAL EMERGENCY MANAGEMENT AGENCY, MODEL STATE DAM SAFETY PROGRAM (FEMA 316/ March 1998). WASHINGTON STATE, *supra*, no. 2, at Appendix A-C, 16-40; FEMA, EMERGENCY ACTION PLANNING GUIDELINES FOR DAMS (FEMA 64/February 1985) at ch. 2; FEMA, MITIGATION DIRECTORATE, FEDERAL GUIDELINES FOR DAM SAFETY: EMERGENCY ACTION PLANNING FOR DAM OWNERS 11 (October 1998); NATIONAL PARK SERVICE, DEPARTMENT OF THE INTERIOR, DAMS AND APPURTENANT WORKS MAINTENANCE, OPERATIONS AND

Similarly, the chance of any one structure catching fire is small, but the potential magnitude of a conflagration is so great that society requires operational fire escapes in multi-story dwellings and often smoke detectors in single family homes. A defense of “it hadn’t happened here before, so we didn’t think it necessary” is an unacceptable defense.

NEGLIGENT FAILURE TO PLAN

We are dealing in many of these cases with a failure to plan in light of the foreseeable risks – in short the negligent failure to plan. This duty to plan is rooted in the common law, but is also imposed by statutes, ordinances, regulations, and professional standards.

Two cases arising out of tragedy illustrate the negligent failure to plan.

The consequences of failing to have an emergency action plan are shown by the failure of Lawn Lake Dam on July 15, 1982. The dam sat high up in the Rockies overlooking the resort community of Estes Park, Colorado. Between the dam and Estes Park was the smaller Cascade Dam. The dam was privately owned by the Farmers Irrigation and Ditch Company, but was located on public National Park Service land.

The dam failed before 6:30 a.m. The Park Service was soon notified. Within 20 minutes a Ranger was dispatched to warn downstream campers.⁷⁶ He proceeded, in a somewhat desultory manner, to warn without a sense of urgency several, but not all, of the campers. The flood wave caused the lower dam to fail, causing extensive loss of life and property damage. The district court found several instances of negligence on the part of the government, and

SAFETY, Guideline NPS-40, Appendix E (1983). COMMONWEALTH OF PENNSYLVANIA, DEPARTMENT OF ENVIRONMENTAL PROTECTION, GUIDELINES FOR DEVELOPING AN EMERGENCY ACTION PLAN FOR CATEGORY 1 AND 2 DAMS (July 1997). FEMA also publishes an outline for preparing an emergency action plan. FEMA, EMERGENCY ACTION PLANNING GUIDELINES FOR DAMS 10-16 (FEMA 64, February 1985). See also, ready.gov.

⁷⁶ Coates v. United States, 612 F. Supp. 592, 593(C.D. Ill. 1985)(The breach was fortuitously noticed by a garbage truck driver on his early morning rounds).

awarded \$480,000 to the family of a deceased camper.⁷⁷ The court held the government had a duty to prepare an emergency action plan:

Because these national parks are outdoors and, therefore, subject to extreme and sometimes unexpected weather changes, structural failures such as the one at issue here, other flash floods, and major fires which occur, changes may be sudden and dramatic (because of acts of God or foibles of man). Therefore, the Government, in creating this relationship with citizens, also creates a duty for itself to develop orderly procedures for dealing with emergencies.⁷⁸

The Court presciently stated:

It is imperative to have a plan in place because in such situations there is little time for reflection. Priorities should be established before an emergency arises; otherwise personnel are unprepared to deal with them.⁷⁹

The court noted: “Elementary lapses, obvious with the clarity of hindsight, could have been avoided through the development of orderly procedures for warning and evacuating people in the park in the case a crisis arose.”⁸⁰ In words that are a thesis of this article, the court created a duty:

The exercise of reasonable care mandated, at a minimum, the issuance of careful and complete warnings to all of the people who were camped in or otherwise using areas of the park which were downstream from Lawn Lake Dam.⁸¹

The second case arises out of Hurricane Katrina. A class action suit, arising out of an oil spill, was consolidated in January 2006. Murphy Oil had a 250,000 barrel above-ground storage tank at its Meraux Refinery in the flooded-out St. Bernard Parish outside New Orleans. About 25,110 barrels of crude oil escaped, some of which contaminated

⁷⁷ *Id.* at 594. Plaintiff and his wife were not warned by the Ranger, but learnt second-hand that campers were being advised to evacuate. The plaintiff went to his car to get his camera and take pictures while his wife woke the children and prepared to leave. He drowned in the surging floodwaters.

⁷⁸ *Id.* at 595-96.

⁷⁹ *Id.* at 596.

⁸⁰ *Id.*

⁸¹ *Id.*

surrounding neighborhoods.⁸² A critical question for the district court in determining the appropriateness of the class action suit was: “[W]hether Murphy Oil had hurricane safety plans, and whether those plans were carried out during Hurricane Katrina”⁸³

Emergency actions plans are well-established, long preceding September 11.⁸⁴ They have either been required or customary for such diverse activities, facilities, and industries as airlines,⁸⁵ coal mining,⁸⁶ dams and reservoirs,⁸⁷ environmental emergencies,⁸⁸ nuclear power plants and nuclear safety,⁸⁹ oil production and transportation, plants or facilities handling toxic substances,⁹⁰ refineries and petrochemical plants, workplace safety,⁹¹ and even horse race

⁸² The Agency for Toxic Substances and Disease Registry estimated 1,800 homes and an undetermined number of other structures were affected by the spill. *Turner v. Murphy Oil USA, Inc.*, 234 F.R.D. 597, 603 (E.D. La. 2006).

⁸³ *Id.* at 604. The case went forward on theories of negligence, statutory law, absolute and strict liability under Louisiana law, nuisance, trespass, and groundwater contamination. The case was settled on September 25, 2006 for \$330 million. 37 BNA *Env't. Rptr.* 2007 (Sept. 29, 2006).

⁸⁴ Indeed, they go by a variety of terms, including business continuity plans, contingency plans, crisis management, crisis planning, crisis reaction, disaster planning, disaster recovery, emergency responses, and risk management.

⁸⁵ Airlines know that planes crash. They have accordingly adopted voluntary emergency response plans, including counseling for relatives of victims. For example, American Airlines executives have a thick binder detailing the airline's response in a disaster. Laurence Zuckerman, *Airline Management Style Honed by Catastrophe*, N.Y. TIMES, Nov. 15, 2001, at C1, col. 2 (Nat. Ed.).

⁸⁶ Coal miners routinely practice rescue operations.

⁸⁷ KY. REV. STAT. ANN. tit. XVII, Ch. 151, §293(a) (2001); ME. REV. STAT. ANN. 37-B §1127 (2001), MICH. COMP. LAWS ANN., Ch. 324, §31523(1) (2001); MONT. CODE ANN. §85-15-212 (1993); N.H. REV. STAT. ANN. §482:11-a (“The owner shall develop an emergency action plan for any dam, the failure of which may threaten life or property.”); §482.12 (2000); PA CONS. STAT. ANN. §693.13 (1997); S.C. CODE ANN. §49-11-150 (2000); UTAH CODE ANN. §73.5(a)-601 (2001); VA. CODE ANN. §10.1-611 (2001).

⁸⁸ OHIO REV. CODE ANN. §3704.032 (2001) (air pollution episodes); OKLA. STAT. tit. 27A, §§1-3-101B(13) (2000).

⁸⁹ *See e.g.* ARK. CODE ANN. §20-21-402(b)(3) (2001); CAL. HEALTH & SAFETY §114660(b)(3); CONN. GEN. STAT. §22(a)-135(a)(13) (2001); FLA. STAT. §252.60; ILL. COMP. STAT. ANN. §420(8)(a) (2001); LA. REV. STAT. TIT. 40 §1299.100(B); MINN. STAT. §12.13, N. H. REV. STAT. ANN. §107-B:1 (including annual reviews); PA. CONS. STAT. §7320(A)

⁹⁰ LA.REV. STAT. tit. 40 §1299.100 (2001); KY. REV. STAT. tit. XVII §§224.01-400(14) (2000).

⁹¹ “An emergency response plan shall be developed and implemented to handle anticipated emergencies prior to the commencement of emergency response operations. The plan shall be in writing and available for inspection and copying by employees, their representatives and OSHA personnel.” 29 C.F.R. § 1910.38 (2001)(2002) (“Employee Emergency Plans and Fire Prevention Plans” for employers of ten or more employees). *See also* 28 CAL-OSHA REP. 3 (abnormally hazardous materials).

tracks.⁹² Fire Departments are perforce trained to respond to emergencies. So too are private and government HAZMAT teams. Law Enforcement and SWAT teams practice training and hostage rescues. Schools have fire drills. Passenger and cruise ships engage in evacuation drills. Airports practice for crash landings. Hospitals practice triage operations. Hotels have evacuation plans. Hospitals and other critical facilities often have backup generators in case of power failures. Highway departments and utilities must respond to all sorts of inclement weather and outages. Utilities share crews to promote recovery efforts. Rescue training is not limited to the obvious entities, such as police, fire and the Coast Guard. The Cold War gave rise to a civil defense program, which metamorphosed into disaster relief agencies.

The federal government, through FEMA and other agencies, promotes both disaster preparedness and response. The federal Centers for Disease Control and state and local public health departments respond to disease and medical incidents. State and local governments have their own emergency preparedness offices and centers,⁹³ disaster preparedness, and emergency response plans.⁹⁴ The National Guard has historically been mobilized in natural disasters and public emergencies. Local governments enter into mutual aid pacts, especially in fire and police emergencies. States have entered into regional agreements.⁹⁵

⁹² See e.g. MINN.STAT. §240.23(f)(2000).

⁹³ These operations are often referred to as emergency operations centers, emergency command centers, and incident command centers. Regardless of the name, the purpose is the same: the coordination of emergency response and recovery decisions, plans, and operations.

⁹⁴ States have disaster preparedness plans. See e.g. ALASKA STAT. §26.23.040(a) (2000); ARK. CODE, tit. 12 §§75-110(a); IDAHO CODE, tit. 46, §1006(2000); IND. CODE ANN. tit. 10, art. 4, ch. 1, §5(a)(2001). LA. STAT. ANN. tit. 29, ch. 6, §726(B)(2000).

⁹⁵ In general, see William R. Dodge, *Regional Emergency Preparedness Compacts: Safeguarding the Nation's Communities*, 34 *The Urban Lawyer* 639 (2002); Alan D. Cohn, *Mutual Aid: Intergovernmental Agreements for Emergency Preparedness and Response*, 37 *The Urban Lawyer*, (2005).

However, as evidenced by Hurricane Katrina, the reality is that when a major disaster, whether of natural or human origin, occurs, we cannot always expect immediate outside assistance.

If, for example, an employee manifests symptoms of the flu during a pandemic, the public health and emergency response officials - federal, state, or local - probably already understaffed and overworked, will undoubtedly be overwhelmed and unable to respond to individual inquiries.

The employer needs to have in place a protocol (EAP) to implement when the threat manifests itself.⁹⁶

The development, refinement, and modifications of such plans are often in response to disasters and tragedies, going back to the Great Chicago Fire of 1871.⁹⁷ Other catalysts for change include Bhopar, India,⁹⁸ the Santa Barbara Oil Blowout,⁹⁹ Exxon Valdez,¹⁰⁰ Three Mile

⁹⁶ The plans by the employers, businesses, educational institutions, hospital, government agencies, and others, should include provisions for dealing with employees, customers, suppliers, visitors, students, or patients, who manifest symptoms of the disease.

⁹⁷ Chicago responded to the great Chicago fire of 1871 by adopting detailed plans for fighting fires, floods, and chemical spills. Sean Tully, *The Mayor, His Troops, and the Health of a City*, FORTUNE 138 (Nov. 26, 2001)

⁹⁸ A release of methyl isocyanate on December 3, 1984, at the Union Carbide of India, Bhopal, India, plant resulted in the death of over 2,500 and injuries to 200,000. The American response was the enactment of "Community Right to Know" statutes. *See e.g.* the Emergency Planning and Community Right to Know Act (EPCRA), 42 U.S.C. §§11001-11005 (1995) (requires government and industry to meet emergency planning and response requirements, as well as supplying Material Safety Data Sheets (MSDS) in the workplace and reporting annual discharge of hazardous chemicals released into the environment. For a discussion of EPCRA's emergency planning provisions, *see* Beth A. Henning, *EPCRA Emergency Plans: What to Consider Post-September 11*, NAT. RES. & ENVIRONMENT 172 (Winter 2002). The myriad societal and political responses to Bhopar, both in the United States and India, are discussed in SHEILA JASANOFF, *LEARNING FROM DISASTER: RISK MANAGEMENT AFTER BHOPAL* (University of Pennsylvania Press 1994).

⁹⁹ On January 28, 1969, a well blew out on Platform A in the Santa Barbara Channel. The political response was a rash of bans, *see e.g.* *Union Oil Co. of California v. Morton* 512 F.2d 743 (9th Cir. 1975), *Secretary of the Interior v. California* 464 U.S. 312 (1984), and transportation controls, *see e.g.* *Ray v. Atlantic Richfield Co.*, 435 U.S. 151 (1978).

¹⁰⁰ On March 24, 1989, the supertanker Exxon Valdez ran aground, spilling over 240,000 barrels of crude oil into Prince William Sound. Congress responded by enacting the Oil Pollution act of 1990, 33 U.S.C. §1321(2001), which requires greater response plans and assurances that effective contingency plans would be established. The

Island Nuclear Plant,¹⁰¹ and now the World Trade Center. Even non-tragic failures can result in changes.¹⁰²

When the event is especially tragic or ecologically disastrous, the legislative response may be great. For example, the Congressional response to the Exxon Valdez Oil Spill was the enactment of the Oil Pollution Act of 1990,¹⁰³ which created a National Contingency Plan to “provide for efficient, coordinated, and efficient action to minimize damage.”¹⁰⁴ Several levels of response were created, including Coast Guard Strike Teams, a national center to provide coordination and operation, State responses, Federal On-Scene Coordinator, District Response Groups, Area Committees, National Response System, National Response Unit, Coast Guard District Response Groups, Area Contingency Plans, and vessel and facility response plans, all in the context of a worse case analysis.¹⁰⁵

long-term effectiveness of these plans has sometimes been questioned. *See* William H. Rodgers, *Where Environmental Law and Biology Meet: Of Pandas’ Thumbs, Statutory Sleepers, and Effective Law*, 65 U. COLO. L. REV. 25, 72-74 (1993), commenting on Congress’ reactions to the Exxon Valdez oil spill by enacting a requirement for a “worst case discharge” analysis for vessel and facility response plans, which should address training, equipment training, unannounced drills, and planned responses. Professor Rodgers commented in his treatise: “the use of contingency plans float in a world of too soon and too late, too much and too little, overresponse and underresponse.” WILLIAM H. RODGERS, JR., ENVIRONMENTAL LAW 619 (2nd Ed. 1996). He concluded: “One wonders whether there is a ‘proper’ role of a hazardous materials contingency plan that can be defined and enforced by law.” *Id.* Our goal is to overcome these issues through thoughtfully prepared EAP’s subject to testing and training. *See also, Act of God, supra*, n. 47 at 118.

¹⁰¹ The Nuclear Regulatory Commission did not require off-site emergency plans prior to the 1979 Three Mile Island nuclear mishap. United States General Accounting Office, *Emergency Planning: Federal Involvement in Preparedness Exercise at Shoreham Nuclear Plant 2* (GAO/RCED-87-45, December 1986). Congress responded in 1980 to the Three Mile Island near-disaster by imposing new requirements for emergency evacuation plans. 94 STAT. 780. *See* Commonwealth of Massachusetts v. United States, 856 F.2d 378 (1st Cir. 1988).

¹⁰² FERC tightened its dam safety standards after the Walter Bouldin Dam failure in 1975. The changes included requiring emergency action plans designed to provide early warnings to downstream inhabitants and property owners. FEDERAL ENERGY REGULATORY COMMISSION, OFFICE OF ELECTRIC POWER REGULATION, REPORT TO THE FEDERAL ENERGY REGULATORY COMMISSION, WALTER BOULDIN DAM FAILURE AND RECONSTRUCTION 47 (Sept. 1978).

¹⁰³ The Oil Pollution Act of 1990 was codified as part of the Clean Water Act, 33 U.S.C. §1321 (2001).

¹⁰⁴ *Id.* at §1321(d)(2).

¹⁰⁵ The “worse case” analysis is defined in the case of a vessel as “a discharge in adverse weather of its entire cargo,” 33 U.S.C. §1321(a)(24) (2002), and for an onshore or offshore facility “the largest foreseeable discharge in adverse weather conditions.” *Id.*

The legal standards for emergency action plans may be found in statutes, administrative regulations,¹⁰⁶ internal agency guidelines, professional and industry standards,¹⁰⁷ or the general common law negligence standard of reasonable care under the circumstances.

Emergency action plans may have received little judicial scrutiny so far, but they have certainly been the focus of extensive statutory, regulatory, and professional attention.¹⁰⁸ For example, the Federal Energy Regulatory Commission (FERC), the Department of Energy (DOE), and several states¹⁰⁹ require dams within their respective jurisdictions to prepare emergency action plans.¹¹⁰ The Federal Power Act authorizes FERC to license hydroelectric

¹⁰⁶ OSHA requires the preparation of EAP's in many situations. The minimal requirements of such EAP's include "Emergency escape procedures and emergency escape route assignments Procedures to be followed by employees who remain to operate critical operations before they evacuate Procedures to account for all employees after emergency evacuation has been completed Rescue and medical duties for those employees who are to perform them The preferred means of reporting fires and other emergencies; and names or regular job titles of persons or departments who can be contacted for further information or explanation of duties under the plan." 29 C.F.R. §1910.38(a)(2). California has adopted similar regulations. Barclays California Code of Regulations, Tit. 8, §3220.

¹⁰⁷ Both the New York Stock Exchange (Proposed Rule 446, Sept. 9, 2002), and the National Association of Securities Dealers have proposed rules by which members must create and maintain contingency plans. 67 Fed. Reg. 57257 (Sept. 9, 2002). The plans must at a minimum address, inter alia, data backup and recovery, all mission critical systems, financial and operational assessments, and alternate communications between customers and the members as well as between a member and its employees. *Id.* at §3570.

¹⁰⁸ See e.g. *Business at Risk*, *supra* n. 6; NPFA, *supra* n. 24. For a detailed examination of the sources of authority for local governments in emergencies, see Howard D. Swanson, *The Delicate Act of Practicing Municipal Law under Conditions of Hell and High Water*, 76 No. Dak. L. Rev. 487 (2000), and David G. Tucker & Alfred O. Braff, III, *Florida's Law of Storms: Emergency Management, Local Government, and the Police Power*, 30 Stetson L. Rev. 837 (2001).

¹⁰⁹ ALASKA ADMIN. CODE. tit. 11, §93.167 (1989); ARIZ. ADMIN. CODE 12-15-1221 (2000); ARK. CODE ANN. 138 00 007 (2001) WESTLAW [subtitle X, §710] ; 2 COLO. CODE REGS. §402-1 (1998) [Rule 16 for EAPs]; FLA. ADM. CODE ANN. r. 62-6723550 (1999); GA. COMP. R.& REGS. r. 391-3-8-.11 (1998); HAW. ADM. RULES. §13-190-42 (1990) WESTLAW; ILL. ADM. CODE tit. 17 §3702.40(1987); KAN. ADM. REGS. 5-40-2 (1983); LA. ADMIN. CODE tit. 70 §2101 (1996) [part VII]; MASS. REGS. CODE tit. 302 §10.11 (2001); MICH. ADM. CODE r. 281.1311 (1993); MINN. R. 6115.0490 (2001); MO. CODE REGS. ANN. tit. 10 §22-3.030 (1985); MONT. ADMIN. R. 36.14.702 (1988); NEB. ADMIN. CODE 457 §005 (2001) [chapter 12]; N. H. CODE ADMIN. R. ANN. ENV-WR 305.10 (2002); N.J. ADMIN. CODE tit. 7 §20-1.11 (1990); OHIO ADMIN. CODE §1501:21-21-04 (1981); 25 PA. CODE §105.134 (1980); 25 S.C. CODE ANN. REGS. 72-3 (1997); S.D. ADMIN. R. 74:02:08:02 (1987); TENN. COMP. R. & REGS. 1200-5-7-.07 (1987); VT. CODE. R. (30 000 014) §4.543 (1986); WASH. ADMIN. CODE §173-175-220 (1992); W. VA. CODE. ST. R. § 47-34-15 (2001); WIS. ADMIN. CODE §333.07 (2001).

¹¹⁰ FERC has jurisdiction over non-federal dams which generate hydroelectric power. Not all dams generate electricity. Other uses of dams include flood control, water supply irrigation, spoils containment (especially in the mining industry), and cooling water for power plants.

power plants and to issue safety regulations “for the protection of life, health and property.”¹¹¹ FERC’s regulations direct operators to file with the Commission an emergency action plan. FERC and DOE regulations require the plans provide early warnings to upstream and downstream inhabitants, property owners, operators of water-related facilities, recreational users, and other persons in the vicinity who might be affected by an emergency.¹¹²

The Resource Conservation and Recovery Act (RCRA) regulations issued by EPA require owners and operators to develop a contingency plan to address “fire, explosions, (other) releases of hazardous waste or hazardous waste constituents which could threaten human health or the environment.”¹¹³ They also require the owners or operators to familiarize local emergency response authorities with the physical layout of the facility, and local hospitals with the properties of the pollutants.¹¹⁴

Even if an emergency action plan is not required by statute or regulation, failure to prepare such a plan could risk substantial liability under common law if a tragedy results which a plan could have averted.

For example, time will often be of the essence in minimizing the risk to downstream populations in case of an imminent or actual dam failure. The existence of a viable emergency action plan, which has been periodically tested and updated, may well reduce the threat to the downstream population, even if the dam cannot be saved.

¹¹¹ 16 U.S.C. §803(c). *See e.g.* *Bluestone Energy Design, Inc. v. Federal Energy Regulatory Commission*, 74 F.3d 1288 (D.C. Cir. 1996).

¹¹² 18 C.F.R. §12.20 (2002).

¹¹³ 40 CFR §264.51(b) (2002).

¹¹⁴ *Id.* at §264.37.

EFFECTIVENESS OF THE PLAN

A different issue arises when a plan is ineffective in preventing the loss of life or minimizing property damage. The argument is that liability should be imposed because the plan failed. It “failed” because it was not 100% effective. During the World War II planning for the D-Day invasion of Normandy, General Dwight David Eisenhower is reported to have said, “The plan is nothing; planning is everything.” The reality is that disasters and emergencies, as with major battles, hardly ever unfold according to plan.

Such an argument would, in fact, impose strict liability on the part of the preparer. The duty is one of reasonable care under the circumstances - not guaranteed success.

Of course, the effectiveness of a plan may also be dependent upon an accurate assessment of the underlying risks and impacted populations, and mitigation and response measures. The duty to warn will be only as good as the underlying assumptions.¹¹⁵ One of the greatest risks of an ineffective plan is to instill a false sense of security both in the institution and the surrounding community.

Emergency action plans are not a constant. They must be periodically reviewed and revised in light of changing risks, lessons learned from other disasters,¹¹⁶ and technological

¹¹⁵ For example, if the inundation zone is not properly ascertained, the emergency action plan for a dam may fail. *See e.g.* Engle v. West Penn Power Co., 598 A.2d 290 (Pa. Super. Ct. 1991). The Exxon Valdez Spill of 10,000,000 gallons of crude oil occurred in the context of a contingency plan, which estimated the most likely spill as being between 42,000 to 84,000 gallons, and had only provided for personnel and equipment to meet that projection. *See* United States General Accounting Office, *Coast Guard: Adequacy of Preparation and Response to Exxon Valdez Oil Spill* 14 (GAO/RCED-90-44, October 1989). In the immortal words of Ayn Rand “Check your premises.” Ayn Rand, *ATLAS SHRUGGED* 191 (Signet ed. 1957).

¹¹⁶ In September 1977, the Davis-Beese Nuclear Plant outside Toledo, Ohio, had a mishap. Its instruments gave off false readings, but the operators made the correct responses and avoided a major disaster. However, the Nuclear Regulatory Commission delayed for over a year in warning operators of similar reactors of the problem. When a similar equipment malfunction occurred on March 2, 1979, the operators at the Three Mile Island (TMI) Nuclear Reactor made the incorrect decision because of their ignorance of the problems at Davis-Beese. *See* General Public Utilities Corp. v. United States, 745 F.2d 239 (3rd Cir. 1984), *cert. denied* 469 U.S. 1228 (1985).

advances.¹¹⁷ A critical constraint is to learn from prior failures.¹¹⁸ Out of tragedy, disaster, failure, and heroism emerge hard won lessons to build upon. Each prior event provides lessons to improve EAP's and emergency responses. The incident officer in charge of the fire control efforts at the Pentagon on 9/11 referred to planning as "the result of experience coupled with assumptions."¹¹⁹ In addition, what worked once might be ineffective, or even counter-productive, under different circumstances.¹²⁰

A critical issue is why the plan was not 100% successful. If, for example, the employees were ignorant of the plan or poorly trained, then negligence will probably apply. Similarly, if contact numbers or other critical components were out of date, then liability should also ensue.

¹¹⁷ As technology changes, so too does the standard of care. Compare *Davison v. Snohomish County*, 270 P. 422 (Wash. 1928) with *Bartlett v. Northern Pac. Ry. Co.*, 447 P.2d 735 (Wash. 1968).

¹¹⁸ For example, the I New York Plaza Skyscraper experienced a major fire on August 5, 1970. Flaws were found in the spray-on fireproofing. Radios did not function 18 years later at a fire in the First Interstate Bank Building in Los Angeles. These problems reappeared with tragic consequences in the collapse of the Twin Towers on 9/11. See Eric Lipton & James Glanz, *U.S. Report on Trade Center Echoes Lessons of Past Disasters*, N. Y. Times, April 2, 2002 at p.A25, col. 1 (Nat Ed.).

¹¹⁹ Mitchell Fink & Lois Mathias: *Never Forget: An Oral History of September 11, 2001* at 161 (HarperCollins 2002)(Statement of James Schwartz, Assistant Chief of Operations, Arlington County Fire Department)(hereinafter referred to as "*Oral History*").

¹²⁰ Sometimes the lessons learnt from an earlier disaster can be counterproductive. For example, in the 1993 bombing of the World Trade Center, several employees of Sandler O'Neill on the 104th floor tried to evacuate by going down the stairs. They were engulfed in smoke, whereas those who went up to the roof sat freezing for hours. Those who stayed in their offices were barely inconvenienced. Many, therefore, stayed in their office in the South Tower when the first plane struck the North Tower. Greg Miller, *Starting Over*, FORTUNE, Jan 21, 2006, at 50, 56. This tragic decision may have seemed rational at the time.

TRAINING, TESTING, AND UPDATING

The process therefore of preparing for an emergency is not a one-time act, but is continuous, subject to constant change as risks, technology, knowledge, expertise, availability of alternatives, and in response to the lessons learnt both from internal experience, practices and testing, and from response efforts elsewhere.

It's often too late during an emergency to pull a plan out of the drawer, dust it off, and peruse it for the first time.¹²¹ The success of a plan will often depend upon the training of employees, including periodic exercises and drills.¹²² If a chain is only as strong as its weakest link, then an EAP is no more effective than its weakest element, which is usually the human factor. That is why continuous training, testing, and updating are critical to the successful implementation of a plan – to minimize the risk of human failure at a critical time.

For example, the National Response Team Report on the Exxon Valdez spill stated:

“[M]any problems that plagued the cleanup should have been apparent from drills, but if they were, no corrective actions were taken.”¹²³

¹²¹ One of the problems during the Exxon Valdez oil spill was that because no major accidents or leaks had occurred in the history of the Trans-Alaska Pipeline, the operators became complacent. Not only were employees untrained in how to respond, but emergency equipment was also unavailable. Douglas A. Lee, *Tragedy in Alaska Waters*, 176 NATIONAL GEOGRAPHIC, Aug. 1989, at 260, 262. For example, a 20-member emergency team, which prepared for round-the-clock responses, was disbanded in 1981. In addition, equipment, critical in oil spill responses, was not maintained. Response equipment had been stored on a barge, but at the time of the spill, had been unloaded from the barge to facilitate repairs to the barge. See Keith Schneider, *Under Oil's Powerful Spell, Alaska Was Off Guard: Enriched and Reassured, Industry and State Cut Disaster Preparation*, N.Y. TIMES, April 2, 1989, at p.1, col.3.

¹²² Various types of training exercises and sessions exist, including evacuation and communication drills, modeling, orientation exercises, simulations, tabletop exercises, functional exercises, full-scale exercises, and testing of remote sensing equipment. OSHA recognizes: “Well developed emergency plans and proper employee training (such that employees understand their roles and responsibilities within the plan) will result in fewer and less severe employee injuries and less structural damage to the facility during emergencies.” OSHA, Evacuation Plans and Procedures, http://www.osha.gov/SLTC/evacuation_etool/eap.html. Simulated accident scenarios are one way, short of an actual emergency, to test the responses as realistically as possible. A detailed description of various training exercises is found at *Laye, supra* n. 12 at 62-74.

¹²³ Russell V. Randle, *The Oil Pollution Act of 1990: Its Purview, Intent, and Effects*, 21 ELR 10119, 10128 (March 1991).

Decision making in an emergency, even by experts, may be difficult, so employee awareness and training is a foundation of any emergency action plan. Employees must be prepared to act virtually instantaneously, perhaps even instinctively.¹²⁴ Yet split-second decisions made during an emergency, without proper training and emergency action plan familiarity, may worsen the situation.¹²⁵ Employees need to have copies of the plan, familiarize themselves with it, be prepared to implement it, and disciplined to follow it, unless circumstances warrant a deviation from the plan. They must know their roles and responsibilities. The plan may be especially critical in the early moments of an emergency. The alternative to familiarity with the emergency action plan may be chaos, confusion, fear, stress, anxiety or indecision with an increased risk of injury, death, and property and economic damages when an emergency arises.

Periodic training and testing exercises are necessary,¹²⁶ including joint training exercises with all potentially affected enterprises and agencies. Exercises test assumptions, priorities, responses, and personnel. This goal is threefold: educate the employees on what to do in an emergency, assess effectiveness and validate or improve the plan by discovering flaws and

¹²⁴ The failure to respond quickly can escalate a problem into a disaster. For example, a fire-fighting cliché is “All fires start small.” *Laye, supra* n. 12 at 20.

¹²⁵ OSHA also recognizes that “A poorly prepared plan, likely will lead to a disorganized evacuation or emergency response, resulting in confusion, injury, and property damage.” *OSHA, supra* n. 101.

¹²⁶ Indeed, annual or periodic testing or review may be required, as with dams, 18 C.F.R. §§12.24 (2002) and nuclear reactors. For example, the Nuclear Regulatory Commission regulations mandate annual testing of alarm sirens. Pennsylvania requires an annual review of municipal and school district radiological response plans, 35 PA. CONS. STAT. §7320, and an annual review of alert notification systems for reactors. 35 PA. CONS. STAT. §7320(10). OSHA requires training on three occasions: initially upon development of the plan; when the employee’s responsibilities or designated actions change; and whenever the plan is changed. 29 C.F.R. §1910.38(a)(5)(ii) (2002). Part of Congress’ response to the Exxon Valdez was to require periodic “drills of removal capability, without prior notice.” 33 U.S.C. §1321(j)(7) (2001). Employee training may be specifically required. For example, OSHA requires 40 hours of off-site training and three days of on-site field experience for employees in close proximity to hazardous wastes. 29 C.F.R. §1910.120(e)(3)(i). Superiors are subject to an additional eight hours of training for employee safety and spill containment. *Id.* at §1910.120(e)(4).

problems in it,¹²⁷ and discovering the strengths and weaknesses of the personnel involved.¹²⁸ In this respect, follow-ups are necessary. A poorly prepared plan may worsen the situation. Indeed, an untested plan may fail in a real emergency. Testing may discover problems in a timely manner.¹²⁹ This second goal can also be promoted by publicizing the plan to the extent necessary to the public and the appropriate public officials.¹³⁰ Training should improve response time in a real emergency and may minimize resulting injuries.

Legislatures may enact as many statutes as they wish, regulators regulate to their heart's content, and enterprises plan to great extent at great expense, but no one can yet predict or plan the individual human response under pressure of a real emergency. Training exercises may provide valuable insights in how individuals will react under pressure.

¹²⁷ A related consideration is that meaningful testing, training, and feedback will result in employees “buying into” the EAP, thereby improving its chances for success in a real emergency.

¹²⁸ History is replete with examples of ineffectual leadership during an emergency or crisis. The classic example is of Nero fiddling while Rome burnt. Just as infamous is the Great London Fire of 1666, which started in a bakery and over three days consumed 2/3 of London, killed only six, and left 200,000 homeless. Will & Ariel Durant, *The Story of Civilization: Part VIII: The Age of Louis XIV* 262-263 (1963). Among the structures destroyed was St. Paul's Cathedral, subsequently rebuilt by Christopher Wren. History recorded “a memorable instance of folly” in that the Lord Mayor of London refused to either order or permit the destruction of 40 wooden houses to form a firebreak, or even to remove the furniture and belongings of the Lawyers of the Temple for fear of liability. See *Respublica v. Sparhawk*, 1 U.S. 357, 362 (1788). Such acts on behalf of public safety are generally protected by the privilege of public necessity. See especially *Surocco v. Geary*, 3 Cal. 69, 58 Am. Dec. 385 (1853), and *Mayor of New York v. Lord*, 18 Wend. 126. (N.Y. Ct. for the Correction of Errors 1837). See also *Harrison v. Wisdom*, 54 Tenn. 99 (1872). Indeed, during the historic San Francisco Earthquake and Fire of 1906, four square miles of the city was destroyed by fire. The progress of the fire was stopped through a combination of dynamiting along Van Ness Avenue and a shift in the winds. U.S. Geological Survey, Department of the Interior, *THE SAN FRANCISCO EARTHQUAKE AND FIRE OF APRIL 18, 1906 AND THEIR EFFECTS ON STRUCTURES AND STRUCTURAL MATERIALS* 138 (1907).

¹²⁹ Functioning alarm systems, such as emergency sirens are often critical to the success of any plan, but can also be highly problematic, as shown even in the cleanup efforts at Ground Zero. An area of concern was the main chilling plant (air conditioning facility), capable of holding up to 24,000 pounds of freon gas. The gas could escape under adverse conditions, possibly suffocating hundreds of workers and converting, when exposed to flames, hydrochloric and hydrofluoric acids and phosgene gas (similar to the mustard gas of World War I). Sirens were installed around the rubble pile pending the examination of the equipment and freon gas. The sirens often failed in tests. WILLIAM LANGEWIESCHE, *AMERICAN GROUND: UNBUILDING THE WORLD TRADE CENTER* 19 (North Point Press 2002).

¹³⁰ Sometimes publication of an emergency action plan may be contraindicated because it could serve as a roadmap to potential terrorists, and thereby help in ascertaining the vulnerability of a facility.

While inadequate responses in an emergency may be a problem, false alarms, often followed by panic and over-reactions, are also concerns. Too many false alarms will result in a nonchalant failure to heed the real warning.¹³¹ A major cause of false alarms and over-reactions is inexperience and inadequate training.

A common problem with organizations, whether private or public, is the turnover in personnel. New personnel should be brought up to speed very quickly on the emergency action plan because an emergency could happen at any time.

FLEXIBILITY INHERENT IN EMERGENCY ACTION PLANS

Prior to the D – Day invasion at Normandy, General Eisenhower is reported to have said: “The plan is nothing; planning is everything”.

The law has established that architects and engineers are not strictly liable for their structures.¹³² As recognized in the germinal case of *Coombs v. Beede*,¹³³ “mistakes and

¹³¹ Cassandra, the daughter of Priam, was given the power of prophecy by Apollo, but with the curse that her prophecies would not be believed. Thus, her warnings to her fellow Trojans about the Wooden Horse went unheeded. One of the problems with disaster evacuations is that, for a number of reasons, people may simply refuse to leave. A modern tragedy occurred in 1969. About 75,000 persons fled inland in advance of Hurricane Camille. Some remained, including 25 guests of the Hotel Richelieu near Pass Christian, Mississippi. They planned a hurricane party. Twenty-three of them perished when the hotel’s roof collapsed when Camille struck. Ben Funk, *Swept Away*, N.Y. Times, Sept. 18, 1977 (Magazine) at pages 38-39.

¹³² See e.g. *K-Mart Corp. v. Midcon Realty Group of Connecticut, Ltd.*, 489 F. Supp. 813, 819 (D. Conn. 1980); *Chapel v. Clark*, 76 N.W. 62 (Mich. 1898); *Chubb Group of Insurance Cos. v. C.F. Murphy & Associates*, 656 S.W.2d 766 (Mo. Ct. App. 1983); *Van Ornum v. Otter Tail Power Co.*, 210 N.W.2d 188, 201 (N.D. 1973); *LaRossa v. Scientific Design Co.*, 402 F.2d 937, 942-43 (3rd Cir. 1968) (no strict liability in New Jersey for designing or engineering a plant); *Stuart v. Crestview Mutual Water Co.*, 110 Cal. Rptr. 543, 549-50 (Cal. App. 1973) (engineers not strictly liable in tort); *Swett v. Gribaldo, Jones & Associates*, 575, 115 Cal. Rptr. 99, 101 (Cal. App. 1974) (no strict liability for soil engineers in 200 unit development); *C.F. Abdul-Warh v. Arthur G. McKee & Co.*, 488 F. Supp. 306 (E. D. Pa. 1980). In general, see A.L.I., RESTATEMENT (SECOND) OF TORTS §299A (1965); John C. Peck & Wyatt A. Hoch, *Liability of Engineers for Structural Design Errors: State of the Art Consideration in Defining the Standard of Care*, 30 VILL.L.REV. 403, 418-21 (1985).

¹³³ 36 A. 104 (Maine 1896).

miscalculations are incident to all the business of life.”¹³⁴ Rather they are liable for negligence, often measured by a professional standard of care.¹³⁵ In the absence of a specific agreement, the architect/engineer does not guarantee a perfect plan or satisfactory result. Engineering is an art - not a science. As expressed in *City of Mounds View v. Walijarvi*,¹³⁶

The reasoning underlying the general rule as it applies . . . to architects . . . is relatively straightforward. Architects, . . . engineers, . . . and others deal in somewhat inexact sciences and are continually called upon to exercise their skilled judgment in order to anticipate and provide for random factors which are incapable of precise measurement. The indeterminate nature of these factors makes it impossible for professional service people to gauge them with complete accuracy in every instance. Thus . . . an architect cannot be certain that a structural design will interact with natural forces as anticipated. Because of the inescapable possibility of error which inheres in these services, the law has traditionally required, not perfect results, but rather the exercise of that skill and judgment which can be reasonably expected from similarly situated professionals¹³⁷

In rejecting strict liability as a basis for liability, the court stated:

If every facet of structural design consisted of little more than the mechanical application of immutable physical principles, we could accept the rule of strict liability which . . . [plaintiff] proposes. But even in the present state of relative technological enlightenment, the keenest engineering minds can err in the most searching assessment of the natural factors which determine whether structural components will adequately serve their intended purpose. Until the random element is eliminated in the application of architectural sciences, we think it fairer that the purchaser of the architect’s services bear the risk of such unforeseeable difficulties.¹³⁸

¹³⁴ *Id.* at 105.

¹³⁵ See *Klein v. Catalano*, 437 N.E.2d 514, 525 (Mass. 1982). *Milton v. Womack, Inc. v. House of Representatives*, 509 So.2d 62, 64 (La. Ct. App.); *writs denied*, 513 So.2d 1208, 1211 (La. 1987). See also, *Housing Authority of City of Carrollton v. Ayers*, 88 S.E.2d 368, 373 (Ga. 1955) (“The law imposes upon persons performing architectural, engineering, and other professional and skilled services the obligation to exercise a reasonable degree of care, skill, and ability, which generally is taken and considered to be such a degree of care and skill as, under similar conditions and like surrounding circumstances, is ordinarily employed by their respective professions.”) See also, *Clark v. City of Seward*, 659 P.2d 1227 (Alaska 1983); A.L.I., RESTATEMENT (SECOND) OF TORTS §299A (1977).

¹³⁶ 263 N.W. 2d 420 (Minn. 1978)

¹³⁷ *Id.* at 424.

¹³⁸ *Id.*

As a practical matter, no structure can be designed and erected so as to stand against any and all perils. As recognized by FEMA in its investigation of the collapse of the Twin Towers on 9/11:

Buildings are designed to withstand loading events that are deemed credible hazards and to protect the public rights in the event such credible hazards are experienced. Buildings are not designed to withstand any event that could conceivably occur, and any building can collapse if subjected to a sufficiently extreme loading event.¹³⁹

Totally risk-free engineering is unavailable.¹⁴⁰

The same proposition is true with emergency action plans. The duty of reasonable care does not guarantee an emergency action plan will apply perfectly to a disaster any more than reasonable care can prevent every accident¹⁴¹ or disaster.

No plan can anticipate all contingencies.¹⁴² John Jester, the Chief of Defense Protective Service, Pentagon, stated in the aftermath of 9/11:

We had actually thought of planes hitting the Pentagon. We're so close to National Airport. We're just a short distance from the runways. In fact, one runway for commuter aircraft comes real close to the Pentagon. So we're always concerned about a possible accident, as well as possibly terrorists using a small plane. But you're never thinking a 757.¹⁴³

¹³⁹ FEMA, WORLD TRADE CENTER BUILDING PERFORMANCE STUDY: DATA COLLECTION, PRELIMINARY OBSERVATIONS, AND RECOMMENDATIONS 2-37, 8-3 (FEMA 403 2002)(hereinafter referred to as "*FEMA*"). Indeed, no protected steel frame building had been known to collapse due to fire prior to 9/11.

¹⁴⁰ In general, see HENRY PETROSKI, TO ENGINEER IS HUMAN: THE ROLE OF FAILURE IN SUCCESSFUL DESIGN (1982). Professor Petroski writes: "[T]he history of structural engineering, indeed the history of engineering in general, may be told in its failures as well as in its triumphs." *Id.* at 9.

¹⁴¹ See e.g. *Wire v. Williams*, 133 N.W.2d 840 (Minn. 1965).

¹⁴² On Saturday, July 28, 1945 during World War II an Army Air Force B-25 Mitchell bomber crashed into the 78th and 79th floors of the Empire State Building, killing 14 and injuring 26. The plane weighed 10 tons, had a fuel capacity of 975 gallons, and was traveling at an estimated 275 mph. *FEMA*, *supra* n. 118 at A-10. The toll would have been worse, of course, had the accident occurred on a weekday. It was conceivable therefore that a plane could crash into one of the Twin Towers of the World Trade Center. Reasonable foreseeability would not though include almost simultaneous crashes into both towers. Therefore, when the first plane crashed into the North Tower, no need was seen by many to evacuate the South Tower.

¹⁴³ *Oral History*, *supra* n. 98 at 157.

To some extent, plans must be flexible due to a variety of factors, including the nature of the facility, structure, business or profession, the risks, natural hazards, geology, topography, the population at risk, likely failure scenarios, and costs.¹⁴⁴ Some risks, or combinations of risks, may be unforeseeable. The unexpected can occur.

For example, the events of September 11 are resulting in a reassessment of how firefighters respond to high rise fires.¹⁴⁵ Prior to the collapse of the Twin Towers,¹⁴⁶ the standard plan for fighting high rise fires was to first use zoned or phased evacuations; that is removing occupants from the two or three floors above the fire, and the floor below, while having the other occupants wait.¹⁴⁷ In addition, with the exception of Los Angeles, the prevailing view was against helicopter rescues from the roof. The theory was that since smoke and flames tend to rise, such as through stairwells, the occupants would have trouble reaching the roof, which might also have obstructed visibility.¹⁴⁸

¹⁴⁴ The investment banking firm of Morgan Stanley was the largest tenant of the World Trade Center. It has decided to place a backup trading floor in Westchester County, away from its midtown Manhattan headquarters on a different power grid and telephone switch. Charles V. Bagli, *Seeking Safety, Manhattan Firms Are Scattering*, N.Y. TIMES, Jan. 29, 2002, at A1, col. 3 (Nat. Ed.). Indeed, the aftermath of 9/11 has witnessed the development of remote, backup/disaster recovery centers. See Daisy Hernandez, *Chirp, Rustle, and 'You've Still Got Mail!': More Companies Turn to Remote Backup Sites in Wake of Sept. 11*, N. Y. Times, Jan. 4, 2003 at A10, col. 1 (Nat. Ed.).

¹⁴⁵ See Chris Hedges, *Department Counting Losses, Rethinks Fighting Every Fire*, N.Y. TIMES, Oct. 1, 2001, at A61, col. 4 (Nat.Ed.). One of the critical lessons for the New York Fire Department from September 11 is the need to improve the communications system. Jim Dwyer & Kevin Flynn, *Before the Towers Fell, Fire Department Fought Chaos*, N.Y. TIMES, January 30, 2002, at A1, col. 2 (Nat. Ed.).

¹⁴⁶ Prior to September 11, no high rise had ever collapsed due to fire.

¹⁴⁷ WALL ST. J., Sept. 25, 2001, at A1, col. 4. See also *Business at Risk*, *supra*, n. 6 at p. 157.

¹⁴⁸ Police helicopters rescued 28 people from the rooftop during the 1993 bombing of the World Trade Center. However, officials of the Port Authority of New York and New Jersey and the Fire Department of New York decided against planning for future helicopter rescues. Indeed, partially out of a fear of terrorist attacks through the rooftops, the roofs of the Twin Towers were locked, precluding any chance of rescue of the people trapped above the impacted floors. *In general*, see Scott V. Paltrov & Queena Sook Kin, *No Escape: Could Helicopters Have Saved People from Trade Center*, WALL ST.J., Oct. 23, 2001, at A1, col. 1.

Similarly, at the time of the 1993 bombing of the World Trade Center, the stairways were dark and poorly ventilated. One change occasioned by the 1993 bombing was to install battery powered lights in the stairwell and glow-in-the-dark paint on the stairwell walls, as well as a new fire alarm system to facilitate evacuation in a future emergency.¹⁴⁹

September 11 also reinforced the concept that an emergency command center should not be located at the site of a major disaster.

Plans must also provide for flexibility as the underlying conditions and presumptions change. Excess rigidity can result in otherwise avoidable consequences.

The perils of strictly following a plan when it is no longer applicable are demonstrated by the tragic shootings at Columbine High School in Littleton, Colorado on April 20, 1999.¹⁵⁰ Two students, Eric Harris and Dylan Klebold, started shooting outside the school around 11:17am and moved into the school. They committed suicide around 12:14pm, which became known to authorities around 12:30pm. The tragic toll was 12 students and one teacher killed and dozens wounded.

The first 911 calls came in at 11:21am. Law enforcement officers from throughout the area responded. The teacher, William Sanders, was wounded at 11:40am and collapsed in Science Room 3. Constant phone calls detailing the declining health status of Sanders were made to the 911 operators. Not until 4:00pm did the S.W.A.T team enter Science Room 3.

¹⁴⁹ See Dean E. Murray and Clifford J. Levy, *The Evacuation that Kept a Horrible Toll from Climbing Higher*, N.Y. TIMES, Sept. 21, 2001, at A1, col. 2. Two other lessons were learnt from the 1993 bombing of the WTC. At that time so many ambulances responded in an uncoordinated manner that they blocked the road. On 9/11 they were parked in an orderly manner away from the front of the World Trade Center complex with a lane left free. *Oral History*, *supra* n. 98 at 122 (Statement of Joseph Torrillo, Director of Fire Safety Education, FDNY). In further response to evacuation problems in 1993 the WTC management purchased special evacuation chairs to facilitate the evacuation of those confined to wheel chairs. The rear wheels are replaced by a sled-like device to glide down the stairs. *Oral History*, *supra* n. 98 at 126 (Statement of John Abruzzo, who required six hours in 1993 to get down from the sixty-ninth floor to safety but only 1 ½ hour on 9/11).

¹⁵⁰ Sanders v. Board of County Commissioners of the County of Jefferson, Colorado, 192 F. Supp. 2d 1094 (D. Col.

A command post, staging area, and perimeter were established. Multiple orders were issued to not permit access to or egress from the facility, the effect was to preclude any escape or rescue efforts. The sheriff's office characterized the situation as a "hostage" situation rather than as a "high risk" situation. S.W.A.T. teams conducted room-by-room sweeps with Science Room 3 in the last area reached. Instead, they ordered everyone to leave the room, including those applying pressure to the teacher's wounds. His wounds, "heretofore survivable, became fatal."¹⁵¹ The case involved issues of constitutional violations, governmental immunity, and 42 U.S.C. 1983.

The actions were protected during the first 75 minutes of the attack. The interests of public and officer safety outweighed the rescue needs of the students and staff.¹⁵² Upon the awareness of the deaths of the assailant, a time to deliberate ensued. The awareness of the teacher's condition and location coupled with the affirmative actions of blocking access and rescue became a deliberate indifference to the teacher's plight.¹⁵³ The acts were viewed as reckless and conscience shocking.¹⁵⁴

A related case involved litigation against the manufacturer of a video game, *The Basketball Diaries*, which involved a protagonist gunning down a teacher and classmates. The Court held no duty existed to foresee intentional violent acts by others.¹⁵⁵

2001)

¹⁵¹ *Id* at .

¹⁵² The tragedy was viewed as a "volatile emergency situation, the scope and nature of which was unprecedented." Schnuar v. Board of County Commissioners of Jefferson County, 189 F. Supp. 2d 1105, (D. Colo. 2001).

¹⁵³ The Court distinguished between "emergency action and actions taken after opportunity for reflection." Deference was given to decisions occurring in emergency situations. Calculated indifference may shock the conscience when time to deliberate exists. *Id* at See also, Schnuar v. Board of County Commissioners of Jefferson County, 189 F. Supp. 2d 1105 (D. Colo. 2001)

¹⁵⁴ The case was settled for \$1.5 million.

¹⁵⁵ Sanders v. Acclaim Entertainment, Inc., 188 F. Supp. 2d 1264 (D. Colo 2002). See also, Watters v. TSR, Inc.,

For example, the tragedy of the Columbine High School shootings on April 20, 1999 in Littleton, Colorado was compounded because a teacher bled to death after the deaths of the two assailants. The police had followed traditional procedures and sealed off the building. By 12:30 pm the Sheriff's Office knew of the suicides of the two teenager shooters. They also knew, through numerous communications from the building, the room in which the wounded teacher lay. The wounds were survivable if promptly treated. However, the authorities adhered to the plan, slowly cleared each room, and continued to block access and egress. They reached the teacher at 4:30 pm, by which time the wounds had become fatal.¹⁵⁶

FAILURE TO FOLLOW THE PLAN

Failure to follow the plan is less defensible. Reasonable care may justify a deviation from the plan; indeed, blind adherence to a plan may be unwise. For example, the failure to follow the plan may be because it didn't fully cover the situation. On the other hand, the failure to follow may be due to ignorance or complacency. For example, one case involved a requirement in a safety manual of the Department of Defense requiring munitions plants to be evacuated during electrical storms. Liability was imposed on the United States for failure to close the plant. Several plant employees were killed or injured in an explosion during a thunderstorm.¹⁵⁷

The burden of proof should be on the actor to justify the deviation.

904 F. 2d 378 (6th Cir. 1990) and *James v. Meow Meoia, Inc.*, 90 F. Supp. 2d 798 (W.D. KY 2000). The video game was also not held to be the proximate cause of the shootings, with the criminal killings constituting a superceding cause.

¹⁵⁶ *See Sanders v. Board of County Commissioners of the County of Jefferson, Colorado*, 192 F. Supp. 2d 1094 (D. Col. 2001). The case was subsequently settled for \$1,500,000.

¹⁵⁷ *McMichael v. United States*, 856 F.2d 1026 (8th Cir. 1988).

THE MECHANICS OF THE PLAN

Obviously, even in the myriad of situations calling for an EAP, the details of the plan will be critical. The emergency action plan should be a customized, risk-based, user-friendly,¹⁵⁸ integrated document designed to reduce the risk of loss of life and damages as well as minimize any further deterioration of the facility, maximize operations in case of a disruption, and facilitate recovery efforts. It delineates the triggering problems and risks and then the procedures to be followed. The plan must provide for failure since emergencies can involve failures. The effective plan must contain provisions to prevent, detect/diagnose,¹⁵⁹ contain, and recovery.¹⁶⁰

The critical first step in preparing an EAP is to identify, assess, and prioritize the risks. The major risks may seem obvious, but not necessarily so. Some risks are inherent in a business, such as armed robberies of banks. Others may be common to the community, such as natural hazards. Random acts of violence are common throughout society.¹⁶¹ A major risk for educational institutions is disease and contagion.¹⁶²

The tragic events of 9/11 and Katrina focus on catastrophic events. Yet in planning for emergencies, the odds are that destructive events for an enterprise will often have a much more mundane cause, such as a fire in the infrastructure, equipment failure, or a burst pipe.

¹⁵⁸ User-friendly can be achieved by such common sense methods as using plain language, setting forth each step on a separate sheet, color-coding, indexing, and tabbing the paper in accordance with the risk and recommended response.

¹⁵⁹ Diagnosis is especially critical if the threat is one of disease.

¹⁶⁰ Essential to the legality of any plan is to follow applicable statutes, ordinances, regulations, and professional standards.

¹⁶¹ See *e.g.* Ann M. v. Pacific Plaza Shopping Center, 25 Cal. Rptr. 137 (1993).

¹⁶² A large mass of students, clustered together in classrooms, cafeterias, and dormitories is a veritable Petri dish for disease. Encephalitis, meningitis, and influenza are major risks for colleges.

Risk is inherent in human activity; no human act is risk free. However, not all risks create a duty; only those that are reasonable foreseeable give rise to a legal duty.¹⁶³

The key is all hazards planning so that a response is available for any emergency rather than being able to respond to only a single, specified hazard.¹⁶⁴ However, specific protocols should be available for some special risks. Planners can geographically delineate many natural risks, but many human risks are unpredictable.

In some instances, statutes define the form and contents of an EAP. For example, Congress enacted the Emergency Planning and Community Right-To-Know-Law (EPCRA) as Title III of the Superfund Amendments and Reauthorization Act (SARA).¹⁶⁵ Section 301 of EPCRA establishes State Emergency Response Commissions (SERC's) and Local Emergency Planning Commissions (LERC's) The LERCs are required to prepare comprehensive EAP's, which must include: the facilities where an extremely hazardous substance is present; the methods and procedures for reporting a release of such a substance; the names of the community and facility coordinators; public notification procedures; methods for determining the occurrence of a release and the geographic area or population likely to be affected; the available emergency equipment and facilities within the community; training programs; and evacuation plans.¹⁶⁶

In the absence of statutory requirements, certain characteristics are fairly constant: the primary response agency, department, authority, coordinator or officer;¹⁶⁷ warning

¹⁶³ See *e.g.* Port Authority of New York and New Jersey v. Arcadian Corp., 189 F.3d 305, 315 (3rd Cir. 1999).

¹⁶⁴ An all-hazards approach includes natural and human disasters, terrorism and workplace violence. NFPA 1650 encompasses "all hazards that might impact people, property, operations, and the environment." *Id.* at §5.3.1-2.

¹⁶⁵ 42 U.S.C. §§11041-11050(c) (1995). Another statute requiring EAP's is the Resource Conservation and Recovery Act (RCRA), 42 U.S.C. §6924(a)(5) (1995)(contingency plans for all hazardous waste treatment, release and storage facilities).

¹⁶⁶ *Id.* at §11003(c).

¹⁶⁷ A unified (incident) command center, with a designated person in charge, is usually preferable to uncoordinated,

system/community notice,¹⁶⁸ and evacuation¹⁶⁹ or isolation;¹⁷⁰ employee training and periodic testing; prioritizing of risks and responses;¹⁷¹ assignment of roles; redundancy, reviewability, and updating of the plan. The prioritization of response efforts will normally start with the saving and minimization of risk to human life. Other priorities are clean up and restoration of operators,

individual action whether the response is by one response team or on a multi-agency or party response.

¹⁶⁸ In some situations, the primary consideration might be community notification and alarm systems. For example, in Tornado Alley which transverses the heartland of America, an extensive warning system exists to notify residents of nearby tornado sightings. The residents should then take appropriate shelter. *See Act of God, supra* n.47 at 50.

On Friday, June 20, 2003 31 freight cars carrying lumber broke loose in a switching yard in Montclair, California. The runaway cars quickly gained speed as they headed down a slight grade towards downtown Los Angeles. Railway employees diverted the cars 28 miles down the tracks onto a side rail designed for 15 mph in the City of Commerce. Eleven cars derailed with two homes destroyed, several damaged, and about a dozen persons injured. The cars were going 86 mph at the time. *See Kurt Streeter & Joel Rubin, Errors in Derailment Described, L. A. Times, June 26, 2003 at p. BI, col. 5.*

Federal regulations do not require warnings to the community in such a situation. Many railroads though have in place emergency warning plans. *See Joel Rubin, Warnings for Runaway Trains Are Not Required: Each Company has its own policy for dealing with emergencies like the Commerce accident, L. A. Times, June 28, 2003 at p. BI, col. I.* At a public meeting after the derailment, a Union Pacific employee stated: "We thought we had a system to notify in case we had an emergency, but we didn't." Allison Hoffman & Olga R. Rodriquez, *Railroad to Aid Commerce's Recovery, L. A. Times, June 27, 2003 at p. B4, col. I-2.*

¹⁶⁹ For example, Washington State posits the primary purpose of the emergency action plan is to provide notification of a failure or impending failure so that downstream residents can be evacuated. *Washington State, supra* n. 2 at 1. Evacuations are common in industrial and transportation accidents, fires, floods, hurricanes, and tsunamis. Of course, an entirely practical problem arises of determining how to evacuate a large metropolitan area, particularly an island or peninsula, such as Manhattan, Long Island (including Brooklyn and Queens), San Francisco, or New Orleans, or a large area such as coastal Florida. *See Johanna Neuman, Mass Evacuations Present Massive Problems, L. A. Times, May 11, 2003 at p.A28.*

Statutory authority often exists for mandatory evacuations, such as for fires and other emergencies. *See e.g.* Alaska Stat. §18.70.075(a)(2); Conn. Gen. Stat. §7-313b; Del. Code Ann. Tit. 16, §6701A(2); N.H. Rev. Stat. Ann. §154-7; Tenn. Code Ann. §6-21-703; West Va. Code §29-3A-1.

Evacuation is a very broad word, which does not by itself provide much specificity. One of the lessons of Hurricane Katrina is that most evacuations plans must consider the elderly, nursing home and assisted living residents, prisoners, illegal immigrants, and even pets.

¹⁷⁰ In some situations, evacuation will only exacerbate the problem. For example, the safest response to a smallpox or pestilence outbreak would be to quarantine the victims to minimize the risk of contagion. Thus, the SARS epidemic during the 2002-03 winter was contained through isolation: (quarantining the victims and their close contacts, including medical workers), and infection controls in hospitals. These steps were effective because of the limited dispersion range of the virus. The key to success is the policy of "early detection, early reporting, early isolation, and early treatment." Keith Brasher & Lawrence F. Altman, *Isolation, An Old Medical Tool, Has SARS Fading, N. Y. Times, June 21, 2003 at p.AI, col. I, p.A6, col. 4.*

¹⁷¹ Many, if not most, emergencies do not involve a total failure. Thus, the emergency action plan should include a scaled level of responses, depending upon the nature and extent of the emergency. Lesser failures warrant a lesser response. Sometimes an immediate response can prevent a larger disaster. Other times the proper response may simply be to have a 24/7 monitor on the facility. Response efforts must also be prioritized because not all problems

and support of the community.¹⁷² Emergency action plans can range from simple¹⁷³ to complicated, but to the greatest extent possible should be succinct, and easy both to understand and implement. Plans will vary depending upon risk. For example, a plan for a potential breach of a low – hazard dam in a rural area should not be as detailed as one covering reservoirs in an urban area.¹⁷⁴

Plans for coping with contagion may include diagnosis, quarantine and isolation,¹⁷⁵ treatment,¹⁷⁶ vaccination,¹⁷⁷ reporting requirements,¹⁷⁸ banning public gatherings, and shutting down public transportation. Public officials may issue emergency proclamations.

Emergency action plans must be site, facility, and structure-specific. Generic emergency action plans, or emergency action plans replete with boilerplate, will often fail the test of a real emergency. Boiler-plate became all too common with EIS/NEPA statements.

can be simultaneously addressed. Nor do they need to be.

¹⁷² For example, even the minimal reopening of a retail operation may provide critical supplies to a community.

¹⁷³ After the first 1993 bombing of the World Trade Center, Morgan Stanley held extensive evacuation drills every two to three months and adopted a policy: “If there was any problem, start the evacuation as soon as possible.” Lawrence Ingrassia, *The Human Toll: One Month Later, Reflections on the Victims of Sept. 11*, WALL ST.J. Oct. 11, 2001 at C1, col. 3, C12, col.5. The Company was the largest employer at the World Trade Center, with about 2700 employees on 22 floors between the 44th and 74th floors of the South Tower. Only six of its employees and six contract workers perished. Another example of a simple plan is to provide for portable fire extinguishers in a small workplace or dwelling. Periodically practicing escape routes and fire drills are highly advisable.

Another very simple step is to make sure exits are well-marked, unlocked, and open outward. The tragic Triangle Shirtwaist Company fire in New York City on March 25, 1911 resulted in 146 women employees dying. The doors were bolted to prevent the employees from leaving and union organizers from entering on one of the three floors in the building while the doors on the other two floors opened inward. See PATRICK RENSHAW, *THE WOBBIES* 98 (Doubleday Anchor 1968). More recently, a 1991 fire at the Imperial Food Products Company chicken processing plant in Hamlet, North Carolina resulted in the deaths of 25 workers and injuries to 49 because emergency exits were chained shut, exit signs were not illuminated, workers did not know how to escape, and inadequate fire-fighting equipment was available. Ronald Smothers, *Chicken Processors Tighten Fire Safety*, N. Y. Times, September 10, 1991 at A14, col. 1. See *Dawkins v. United States*, 226 F. Supp. 2d 750 (M.D.N.C. 2002).

¹⁷⁴ See e.g. *Mayor of New York v. Bailey*, 2 Denio 433, 440 – 41 (N.Y. 1845); *Eikland v. Casey*, 266 F. 821, 823 (9th Cir. 1920), cert – denied, 254 U.S. 652 (1920); *Erickson v. Bennion*, 503 P. 2d 139, 140 – 41 (Utah 1972).

¹⁷⁵ *In Re Halko*, 54 Cal. Rptr. 661 (Ct. App. 1966) (tuberculosis) *In Re Martin*, 188 P. 2d 287 (Cal. Ct. App. 1948).

¹⁷⁶ *Love v. Superior Court of San Francisco*, 276 Cal. Rptr. 660 (Ct. App. 1990) (compulsory AIDS testing).

¹⁷⁷ *Jacobson v. Massachusetts*, 197 U.S. 1 (1905).

The plans need to take into account several factors, including the populations at risk,¹⁷⁹ the nature of the risks¹⁸⁰ and threats, potential losses and damages, possible failure modes, types of structure, foundation characteristics, natural characteristics,¹⁸¹ expected response and reaction times, the types of response, warning and evacuation plans,¹⁸² communications, emergency shelter and accommodations, response teams, the prioritization of response efforts,¹⁸³ and accounting for personnel.¹⁸⁴

The events of 9/11¹⁸⁵ and Katrina¹⁸⁶ require consideration of the health issues and environmental exposure to responders present in cleanup and recovery efforts. Details, even seemingly minor details, may be critical. For example, supplies, or orders for, non-latex gloves are important because of the now-recognized allergies of the population to latex gloves.

¹⁷⁸ Whalen v. Roe, 429 U.S. 589 (1977).

¹⁷⁹ In the case of a dam, for example, a critical constraint is to accurately delineate the inundation zone. *See e.g.* Engle v. West Penn Power Co., 598 A.2d 290 (Pa. Super. Ct. 1991).

¹⁸⁰ For example, Congress charged the Army Corps of Engineers in 1972 with inspecting the Nation's dams in the aftermath of several dam failures. THE NATIONAL DAM INSPECTION ACT OF 1972, P.L. 92-367. The Corps classified dams into three categories: high hazard, significant hazard, and low hazard, depending upon the degree of risk. High hazard dams are those in which the potential loss of life is more than a few, and the potential downstream loss excessive. Significant hazard dams are those with a potential loss of only a few lives and appreciable downstream economic loss. Low hazard dams are those with no expected downstream loss of life and minimal potential downstream economic loss. The duty of care would obviously vary with the nature of the dam. *In general, see Denis Binder, Dam Safety: The Critical Imperative*, 14 LAND AND WATER L.REV. 381, 382 (1979).

¹⁸¹ These aspects can include geology, hydrology, meteorology, and seismic.

¹⁸² Evacuation plans should include the conditions that trigger an evacuation, the means, and routes of evacuation, including diagrams. The routes should be well marked, and in the case of facilities, provide adequate lighting. Post-evacuation procedures should include a means to ascertain the status of the evacuated, such as with a designated marshalling/assembly point or means of electronic communications.

¹⁸³ The response may vary in light of the nature of the emergency. Not all failures will be total or instantaneous. Therefore, plans must provide for prioritization, often distinguishing between immediate or short-term responses and longer-term reactions. For example, warnings, evacuations, and similar response activities may not be immediately indicated.

¹⁸⁴ One of the potentially greatest issues in the immediate aftermath and confusion of an emergency is accounting for employees. Assigned reporting locations, phone numbers and web sites, can facilitate the process. Remember that OSHA regulations require plans to include procedures to account for personnel. 29 C.F.R. §1910.38©(4).

¹⁸⁵ 9/11 included a cloud of pollutants descending upon lower Manhattan. *See In RE World Trade Ctr. Disaster Site Litig.*, 456 F. Supp. 2d 520 (S.D.N.Y. 2006); 469 F. Supp. 2d 134 (S.D.N.Y. 2007).

¹⁸⁶ Katrina entailed a large, perhaps toxic, mold.

A critical constraint with any plan is the acquisition of information regardless of the degree of the catastrophe, chaos, or confusion. The effectiveness of any response is, to a large degree, dependent upon the timeliness and quality of the available information to deploy resources, implement warning and evacuation plans, provide emergency assistance, and manage and monitor developing events.

The plans need to be coordinated with local, state and federal public safety disaster response offices. A famous line of John Donne is: "No man is an island, entire of itself."¹⁸⁷ So too, no EAP should be isolated onto itself, oblivious of the larger community. Indeed, a foreseeable emergency may be of such a magnitude as to swamp the resources of the facility and surrounding community.¹⁸⁸ However, plans need to provide for a unified incident command center. Someone must be in charge of the efforts.

The plan should provide a series of response measures, trigger steps, which can normally be implemented on a step-by-step basis. The scenarios will vary by the nature of the failure.

The lessons from any individual emergency are not universally applicable to all emergencies. For example, 9/11, Katrina, and Rita illustrate the need for timely evacuations. However, an overemphasis on evacuations obscures the reality that shelter-in-place may be the preferred response for many risks, including contagious diseases. Evacuation may spread the risk in these scenarios.

Personnel issues are a major concern in responding to emergencies. The plan should distinguish between short term priorities and long term responses. Immediate responses should include initiating search and rescue operations, reestablishing communications, and providing for

¹⁸⁷ John Donne, *Devotions upon Emergent Occasions XVII*. See *Bartlett's Familiar Quotations* 231 (16 ed. 1992).

¹⁸⁸ Local governments, rural communities and counties, may especially have inadequate resources, personnel, and

basic human needs, such as food, water, ice, and shelter. Protecting the health of responders is now also recognized as a lesson from 9/11.¹⁸⁹ Recovery and restoration of critical infrastructure should begin early in the process.

Depending upon the nature of the emergency, personnel should be sheltered in place,¹⁹⁰ evacuated or partially evacuated.¹⁹¹ If disease and contagion are the concerns, then mandatory sick leave and home quarantine may be the proper recourse, recognizing that issues of medical confidentiality may arise.

The long-term impacts of a major disaster will often include emotional distress problems for the survivors, family members, and rescue workers.¹⁹² The need to respond to the emergency should not exclude the responders from recognizing that counseling will also be needed fairly quickly in the overall response effort.

The identification in advance of critical personnel and functions is a major factor in the success of an EAP. Once identified, then back-ups should be established and trained.¹⁹³

expertise to respond to a major emergency.

¹⁸⁹ Liability may exist for negligence in clean-up activity. Negligence in monitoring the air quality and assuring safety in the Ground Zero recovery efforts, such as not providing adequate respiratory equipment, occurred in the ten month removal activity. A Mount Sinai Medical Center study reported 70% of the 10,000 workers tested suffered from new or substantially increased respiratory problems since 9/11. The hazardous materials released into the air included asbestos, benzene, cadmium, chromium, lead, mercury, and PCB's. Over 3,000 lawsuits were filed alleging respiratory injuries. Allegations of the emergency responders included failure to provide the training and equipment available, necessary, and appropriate to protect them. In *RE World Trade Ctr. Disaster Site Litig.*, 456 F. Supp. 2d 520 (S.D.N.Y. 2006).

¹⁹⁰ If employees remain at the site, then provisions must be made for contacting their families.

¹⁹¹ In a partial evacuation, most personnel are evacuated, but critical employees remain at the facility. These may include security, information technology, and facilities management personnel.

¹⁹² A well-understood response to disasters and tragedies is post-traumatic stress syndrome. A famous study of the psychological impact of the Buffalo Creek disaster is KAI T. ERIKSON, *EVERYTHING IN ITS PATH: DESTRUCTION OF COMMUNITY IN THE BUFFALO CREEK FLOOD* (Simon & Schuster 1976). See also *Prince v. Pittston Co.*, 63 F.R.D. 28 (S.D. W. Va. 1974); Note, *Mental Distress-Summary Judgment Improper Where Plaintiffs allege Severe Mental Distress Despite Their Absence From Location of Tortious Activity*, 63 Geo. L.J. 1179 (1975). New York mandated citywide counseling for the police department in the aftermath of 9/11. *Oral History, supra n.* 98 at 117 (Statement of New York City Chief of Police Joe Esposito).

¹⁹³ The planners may learn that in an emergency a parent might prefer to stay at home with the family rather than

Responsibility and authority for specific tasks must be clearly delineated. Notification charts should be prepared, delineating the order of notification, depending on the nature of the emergency.¹⁹⁴

The planners need to be “pessimists” in their assumptions, since failures may often be worse than any “sunny-day” scenario.¹⁹⁵ Indeed, a General Accounting Office critique of an EAP exercise at the now closed Rancho Seco Nuclear Plant outside Sacramento, California questioned the effectiveness of the exercise:

First, all exercises since 1975 among the utility and State and local governments were held between 8:00 and 11:00 in the morning on regular workdays. This does not ensure that plant personnel working during off-shifts participate in emergency response exercises with State and local organizations, nor does it allow State and local jurisdictions to test their abilities to contact and assemble their staffs on a 24-hour basis. Because nuclear power plant accidents can occur at any time, it is important to assure that all personnel periodically participate in exercises and that State and local jurisdictions can respond on a 24-hour basis.¹⁹⁶

The emergency action plan should address critical variables that may hamper response and recovery efforts. These factors include 1) acquiring site access,¹⁹⁷ while at the same time limiting access only to those who should be there;¹⁹⁸ 2) securing alternative means of

come to work. They therefore should prepare for that contingency.

¹⁹⁴ For example, external notification may sometimes be a priority, whereas other times only internal alerts within the organization might be necessary.

¹⁹⁵ Pessimistic assumptions should include how to function if the command facility is damaged, critical employees are unavailable, or the computer database is inaccessible through the primary access. In addition, major emergencies will probably last longer than one day. Therefore, plans should be available for back-up staffing and staggered shifts. The event may also occur in a period of incessant inclement weather, which will delay response and recovery efforts.

¹⁹⁶ United States General Accounting Office, *Emergency Preparedness Around the Rancho Seco Nuclear Powerplant: A Case Study 5* (GAO/EMD-79-103, October 2, 1979).

¹⁹⁷ Access problems can include remote locations, narrow transportation corridors and choke points, inclement weather, seasonal problems, and natural disasters such as flooding.

¹⁹⁸ Means of access control can include vehicle barriers, gates, layers of security, badging, biometrics, visitor access procedures, CCTV, and police lines.

transportation;¹⁹⁹ 3) stockpiling of, or otherwise access to, emergency equipment;²⁰⁰ 4) parts, resources and supplies;²⁰¹ 5) communications, including telecommunications;²⁰² 6) the media;²⁰³ and 7) staff availability.²⁰⁴ The EAP also needs to provide for obtaining critical information, such as the population at risk,²⁰⁵ the contents of the facility,²⁰⁶ building plans and schemata,²⁰⁷ other vital records,²⁰⁸ and maps. If time permits, disaster response teams and resources should be pre – deployed.

¹⁹⁹ Helicopters and, in the case of flooding, boats may be preferred alternative means of transportation.

²⁰⁰ Often times pre emergency contracts, “contingency contracts,” should be entered into, such as with contractors.

²⁰¹ A reserve supply of critical resources should be available at the site, such as flashlights, first aid kits, food, and water. In addition, standby agreements with independent contractors and suppliers may be necessary. A listing of possible contractors, suppliers and vendors with emergency contact numbers, noting those under contract to the organization, is desirable. A critical constraint is to have any contracts with suppliers and vendors provide for priority, therefore facilitating business continuity.

In the case of manufacturers and distributors, the plan should anticipate disruptions in an increasingly global supply chain.

²⁰² Telecommunications “gridlock” is a well-established phenomenon during emergencies. Various alternatives exist, and must often be utilized in an emergency. Dedicated radio and phone equipment, with limited access, secure from interruption, is essential. Cell phones, PDA’s, pagers, e-mail, internet, intranet, faxes, tdd lines may be unreliable in a major emergency. A preferred alternative is the use of satellite phones. Conference call capacity and Caller ID are also highly desirable. A priority has to be securing and maintaining communications between response coordinators and critical personnel. Web sites may be established for personnel access.

²⁰³ Information releases should be timely, accurate, and succinct. The information should be provided to all those who need to know, which will often include the general public. Experienced individuals should be designated as the primary contact for the media for several reasons: 1) reduce external pressures on the emergency personnel; 2) communicate a single message and avoid miscommunication in an otherwise chaotic time; and 3) try to alleviate fear and panic in the community as well as dispel rumors. A void or vacuum should not exist for media speculation.

²⁰⁴ Assumptions about the availability of staff may be erroneous. The plan should include the means to contact critical personnel, including replacements, recognizing that contacting critical personnel may be difficult during an emergency. Other problems include relieving apprehension of employees about their families by determining the status of family members. As with the media contacts, a critical component is the management of fear and apprehension.

²⁰⁵ Knowledge of the number and usual locations of occupants and tenants are important.

²⁰⁶ For example, responders should know if the facility contains explosives or toxic chemicals. Access to EPCRA filings would be helpful.

²⁰⁷ This information should be obtainable both on computers and in hard copy, since computer access may not always be readily available, such as with the loss of electrical supply.

²⁰⁸ See e.g. ARMA International, *Vital Records: Identifying, Managing, and Recovering Business Critical Records* (2003), approved as American National Standards Institute Standard ANSI/ARMA 5-2003 (March 17, 2003).

Planners also need to consider existing contractual obligations, such as with unions, suppliers, and customers. These may constrain response actions unless worked out in advance.

An additional priority, both during an emergency and prior to an emergency if warnings are available, is to impose a moratorium on non-critical information technology changes. We've come to recognize from experience that IT changes may result in disruptions of IT, including shut downs and incompatibility issues. These risks are unacceptable in times of crisis.

While the plan needs to be customized, the planners need to recognize that facilities are often interrelated.²⁰⁹ An emergency may be localized or widespread. A failure at one location can lead to a cascading failure throughout a much larger system or region.²¹⁰ Even a local emergency may have regional implications. For example, the failure of a large dam has effects not only downstream but also upstream, including operations at other facilities.

Another consideration for many plans is a legal one. For example, many statutes require notification to the government of oil and toxic spills,²¹¹ employee injuries or deaths, or other incidents.²¹² In addition, while monetary considerations may appear callous in the midst of the

²⁰⁹ For example, Brookfield Properties manages properties across the street from the World Trade Center. It had in place at the time of 9/11 a comprehensive evacuation plan, which involved not only the major tenants of the property, but also the neighboring New York Mercantile Exchange and the Battery Park City Authority. Once the first plane struck, the evacuation plan was implemented. Roughly 45,000 were safely evacuated without an injury. *Oral History, supra* n. 98 at 56-57 (Statement of Ralph Blasi, Director of security for Brookfield Properties).

²¹⁰ The classic example is the famous Blackout of 1965. An Ontario Hydro System relay broke on November 2, 1965. The resulting power surges "cascaded" throughout the interconnected power grid on the East Coast, overloading circuits, resulting in over 30 million people being without power for up to three days.

²¹¹ For example, the Oil Pollution Act of 1990 requires any person "in charge" of a facility or vessel from which a harmful quantity of oil or hazardous substance is discharged to immediately report the discharge to the appropriate agency of the United States Government "as soon as he has knowledge" of the discharge. 33 U.S.C. §1321(b)(5) (2001). *See e.g.* Chevron, U.S.A. v. Yost, 919 F.2d 27 (5th Cir. 1990).

Section 103(a) of CERCLA provides: "Any person in charge of a vessel or an onshore or offshore facility, shall, as soon as he has knowledge of any release of a hazardous substance in quantities equal to or exceeding the substance's reportable quantity" immediately notify the National Response Center. 42 U.S.C. §9603(a) (1995). *See also* 42 U.S.C. §4693(a) (1995) (RCRA); 42 U.S.C. §11004 (1995)(EPCRA), 15 U.S.C. §2607(e) (1998)(Toxic Substances Control Act), 42 U.S.C. §§7412r(1), 7412r(7)(A) (1995) (Clean Air Act).

²¹²In general, see Arnold W. Reitze & Steven D. Schell, *Reporting Requirements for Nonroutine Hazardous*

chaos of an emergency, reimbursement concerns often necessitate maintaining detailed documentation. Finally, the site may often be a crime scene. The rescue of survivors, and containing the emergency are the prime considerations. However, at some point criminal investigators may enter the site and conduct their investigations.

THE DUTY TO WARN

The impacted population of a disaster may have some forewarning, such as with hurricanes, tsunamis, or tornadoes, or minimal or no warning, as with the World Trade Center or earthquakes. Response time will often be critical.²¹³ The need therefore is for immediate reaction, such as evacuating a burning building.

Timely warnings may allow impacted populations to safely evacuate²¹⁴ or seek shelter, such as in the case of an incoming storm, blizzard, hurricane, or tornado. Emergency actions should include warning and evacuation plans for the population at risk, and immediate notification of the appropriate public officials and agencies.

The duty to warn²¹⁵ should extend to all those reasonably foreseeably at risk in an emergency, such as with the failure of a structure. Any other distinctions between those who should or should not be warned may appear arbitrary and capricious.²¹⁶

Pollutant Releases Under Federal Environmental Laws, 5 *Envtl. Law* 1 (1998).

²¹³ A Bureau of Reclamation study in 1999 recognized that “Loss of life is highly related to the warning issued to the people at risk.” WAYNE J. GRAHAM, U.S. DEPT. OF INTERIOR, BUREAU OF RECLAMATION, DAM SAFETY OFFICE, A PROCEDURE FOR ESTIMATING LOSS OF LIFE CAUSED BY DAM FAILURE 17, Sept. 1999 (DSO-99-06). (Hereinafter referred to as “*Loss of Life*”).

²¹⁴ For example, designated, well-marked hurricane evacuation routes may help a population escape an incoming storm, and are common throughout the Gulf States.

²¹⁵ The duty to warn is well established in the law. *See e.g.* A.L.I. RESTATEMENT (SECOND) TORTS §402A, comment k (unavoidably unsafe products). *See also* Chrysler Corp. v. Dallas Power & Light Co., 552 S.W.2d 742 (Tex. Ct. Civ. App. 1975), Ford Motor Co. v. Dallas Power & Light Co., 499 F.2d 400 (5th Cir. 1974); Mayes v. Union Carbide & Carbon Corp., 101 S.E.2d 864 (W. Va. 1958).

²¹⁶ Two young girls drowned on July 15, 1976, when a sharp increase in the flow of the White River in Washington

The means of warning can vary, including public address systems, sirens, radio and television notifications, phone calls, automated message systems, faxes, pagers, e-mail, internet, intranet, and individualized warnings. The plan should include home, office and cell phone numbers, radio communication frequencies, and e-mail addresses of critical contacts. These contact numbers should be kept up to date. Traditional warning systems may be a problem in a rural, sparsely-populated area. If so, one alternative is to provide the residents with dedicated radios.

Since emergencies do not necessarily occur in broad daylight during business hours,²¹⁷ the plan must be implementable at any time.

Another critical caveat is that “false alarms” may create an attitude of disbelief and distrust in the community, reducing effectiveness when an actual disaster strikes.²¹⁸ Either to warn too early or too late creates problems. A well-planned emergency action plan should clarify and simplify the decision.

swept them off a sandbar. The Corps started releasing an extra 786 cfs at 8:25 a.m. It reached the girls at 1:30 p.m. The water “took only an estimated three to five minutes to go from a very low flow to a very high turbulent flow.” WASHINGTON DEPARTMENT OF ECOLOGY, WHITE RIVER INVESTIGATION AND ANALYSIS OF OTHER CONTROLLED RIVERS, 18 (August 1976). The author was working in the Counsel’s Office of the Seattle District of the Corps of Engineers at the time of the tragedy. He remembers being told the Corps would routinely notify the Muckleshoot Indians downstream of planned releases due to prior incidents, but no one else, as well as residents downstream from the Howard Hanson Dam, a similar facility. This fact is not in the published report. *See also* IBP, Inc. v. Iowa Employment Appeal Bd., 604 N.W.2d 307, 321-324 (Iowa 1999).

²¹⁷ The Kelly Barnes Dam in Toccoa, Georgia, failed on Sunday, November 6, 1977, at 1:30 a.m., killing 38. FEDERAL INVESTIGATIVE BOARD, REPORT OF FAILURE OF KELLY BARNES DAM, TOCCOA, GEORGIA 1 (1077); COMPTROLLER GENERAL OF THE UNITED STATES, REPORT TO CONGRESS, SLOW PROGRESS IN DEVELOPING AND IMPLEMENTING A NATIONAL DAM SAFETY PROGRAM 5 (CED-77-94, June 24, 1977). Similarly, although no fatalities occurred, the Walter Bouldin Dam in Alabama also burst at 1:30 a.m. on February 10, 1975. FEDERAL ENERGY REGULATORY COMMISSION, OFFICE OF ELECTRIC POWER REGULATION, WALTER BOULDIN DAM FAILURE AND RECONSTRUCTION 7 (Sept. 1978). If we apply Murphy’s Law, then many failures will occur on weekends, holidays, evenings, and vacation periods.

²¹⁸ The Buffalo Creek tailings dam failed on February 26, 1972. 125 fatalities ensued. Warnings did not begin until after the structure failed. At least four earlier false alarms resulted in little reaction to the warnings. *Loss of Life*, *supra* n. 165 at 4.

REDUNDANCY

Resiliency and redundancy are critical to many emergency plans. For example, some systems, especially communications and computers, need backup or alternative systems and paths.²¹⁹ These systems need to be sufficiently independent of the primary path that they will not be placed at risk by the same scenario that imperiled the primary path.²²⁰ This lesson was reinforced by the World Trade Center attack on September 11, when many of the critical telecommunication facilities in lower Manhattan were heavily concentrated in a few facilities. Even without a September 11, telecommunication systems often become jammed in an emergency.²²¹ Thus, redundancy in key infrastructure components, such as transportation, telecommunications, and energy,²²² is often an imperative.

One aspect of redundancy that has often been overlooked is the availability of the EAP's. They should normally be available both in hard copy²²³ and on-line with links to the plans.

²¹⁹ Hospitals often have backup generators to kick in if the power goes out. Dams may similarly need auxiliary power systems to operate outlet and spillway gates. Emergency spillways are a critical factor in lowering water levels to prevent dam failures. An important constraint for backup generators is to have an adequate fuel supply.

²²⁰ On July 19, 1989, a United Airlines DC-10 crashed in a cornfield next to the Sioux City, Iowa airport. The rear engine had exploded, severing two of the hydraulic lines, resulting in a loss of hydraulic fluid in all three of the aircraft's independent hydraulic systems. Even though only one of the three was the primary line, and the other two were emergency backups, all three lines went through the same pathway, making all vulnerable to the same problem. Heroic efforts by the flight crew resulted in 184 people surviving the crash and only 112 dying. *See In Re Crash Disaster at Sioux City, Iowa, on July 19, 1989*, 781 F.Supp. 1307 (N.D. Ill. 1991).

Similarly, a big concern 25 years ago over nuclear safety was the fear that a reactor could lose its cooling system (the "China Syndrome"). A backup emergency core cooling system (ECCS) existed, but it conceivably could be disabled by the same problem that crippled the primary cooling system. *See Nader v. Nuclear Regulatory Commission*, 513 F.2d 1045 (D.C. Cir. 1975).

²²¹ Reliable and redundant two-way communication systems are thereby essential.

²²² Sometimes this goal can be achieved simply by having a dependable backup generator with a fuel tank of sufficient capacity.

²²³ For example, off-site lockboxes can contain critical documents, or copies thereof.

The need to back up computers is well understood. The destruction of a building may well result in the loss of the files, computers, and hard copy in the structure. Hackers and viruses may be similarly destructive.

Consequently, important hard copy should be scanned or otherwise entered into the computer data base.²²⁴ The computers should in turn be backed up daily onto disks, tapes, and remote, off-site servers. The back-up systems need to also be periodically tested.

CONCLUSION

Negligence analysis often revolves around the exercise of reasonable care that will either prevent or minimize the risks of an accident or the resulting injuries. Emergency action plans are just a reasonable, logical extension of existing analysis. Plans to respond to a disaster are as integral in negligence analysis as exercising reasonable care to prevent an accident. Emergency action plans are as critical in minimizing losses as design, construction, maintenance, operations, and inspection.

The duty of reasonable care should extend to taking steps to minimize the danger of an emergency, whether from natural or human causes, through the implementation of an emergency action plan. Such a plan should in fact be an integral part of the “operations” of the facility. Indeed, emergency action plans are well established by government, industry and professional standards.

We require smoke detectors, sprinkler systems, fire extinguishers, and fire escapes to minimize the risks of fires. Emergency action plans may be just as effective in saving lives and minimizing damages.

²²⁴ Phyllis Plitch, *EEOC Is Pushing Less Paper in Wake of September 11 Attacks*. WALL ST. J. Jan 30, 2002, at B50, col. 4.

We are not positing that every home or small merchant should prepare an elaborate plan. We are stating that where the risks are significant, the potential loss of life and property damage is great, and the costs and difficulties of preparing an emergency action plan that will minimize damages and impacts are low, the law imposes a duty of reasonable care to prepare such a plan based upon the reasonable foreseeability of these risks. The plans should be simple, but flexible.

Once adopted, the emergency action plan is a dynamic document and process, which should be periodically reviewed, revised and tested.

Let us finish with an adage frequently used by engineers: “Failing to plan is planning to fail.”