SUMMER 1989

Journalism Quarterly

Devoted to Research in Journalism and Mass Communication

By Michael R. Greenberg, David B. Sachsman,
Peter M. Sandman and Kandice L. Salomone

Risk, Drama and Geography in Coverage Of Environmental Risk by Network TV

Sudden, violent risks get much more coverage than chronic risks which are of equal consequence.

► Ecology became a matter of widespread public concern in 1969 with the dramatic Santa Barbara Channel-Union Oil spill.[1] Two decades later, even before the Exxon Valdez spill, the public's support for environmental protection seems to be stronger than ever.[2] A clean environment has become an American value.[3]

Television, the public's major source of news, is partly responsible.[4] No written words datelined Santa Barbara could compare with television's film images of helpless birds coated with oil struggling to survive. Television, the visual medium, is especially suited to present dramatic stories, the kind the public tends to recall.[5] Seventy-three percent of Americans get environmental news from television, compared to 62% from newspapers, and only 37% from magazines, 21% from friends, and 12% from other sources.[6] The same is true for health information. Fourteen percent of Americans get cancer prevention information from physicians; 60% get it from television.[7]

If television is partly responsible for public awareness of environmental and health problems, it may also be partly responsible for the public's confusion

[1] David B. Sachsman, "Public Relations Influence on Coverage of Environment in San Francisco Area," *Journalism Quarterly*, 53:54-60 (Spring 1976).

[2] Louis Harris, "Environmental Issues Could Become a Factor in Congressional Races," *The Harris Survey*, May 19, 1986, p. 3; New York *Times*, "Poll Finds Strong Support for Environmental Code," Oct. 4, 1981; Robert C. Mitchell, "Public Opinion and Environmental Policies in the 1970s and 1980s," in Norman J. Vig and Michael E. Kraft, eds., *Environmental Policy in the 1980s: Reagan's New Agenda* (Washington, D.C.: Congressional Quarterly Press, 1984), p. 52.

[3] The Conservation Foundation, *State of the Environment: A View Toward the Nineties* (Washington, D.C.: The Foundation, 1987).

[4] Dan Nimmo and James E. Combs, *Nightly Horrors: Crisis Coverage in Television Network News* (Knoxville, Tenn.: University of Tennessee Press, 1985).

[5] John P. Robinson and Mark R. Levy, "Interpersonal Communication and News Comprehension," *Public Opinion Quarterly*, 50:160-175 (Summer 1986).

[6] Arvin W. Murch, "Public Concern for Environmental Pollution," *Public Opinion Quarterly*, 35:100-106 (Spring 1971).

[7] National Cancer Institute, *Cancer Prevention Awareness Survey* (Washington, D.C.: U.S. Government Printing Office, 1984).

► Michael R. Greenberg is distinguished Professor and co-director of the Graduate Program in Public Health at Rutgers University and the University of Medicine and Dentistry of New Jersey. David B. Sachsman is dean of the School of Communications at California State University, Fullerton. Peter M. Sandman is director of the Environmental Communication Research Program at Rutgers. Kandice L. Salomone is research associate in the Environmental Communication Research Program. This research was supported as a project of the Hazardous Substance Management Research Center at the New Jersey Institute of Technology.

about the relative risk of different hazards. Government, corporate and environmental group representatives criticize television's tendency to concentrate on the visual and dramatic—that is, spectacular scenes, crises, conflicts, heroes and villains—and to ignore familiar but deadly health and environmental hazards.[8] When the mass media cover environmental risk issues, they pay relatively little attention to the scientific degree of risk.[9]

Even the assumption that the most visual and dramatic risks are covered has been challenged. Based on analyses of earthquakes, hurricanes and floods, Adams found that the severity of natural disasters explained little about nightly television news coverage of those events. Cultural proximity (defined as the number of U.S. tourists visiting the country) was the strongest predictor of coverage.[10] The thesis that the media prioritize places—for example, a small catastrophe in an important place is more important than a bigger one in an unimportant place—has been discussed by Boyer, Wilkins, and Bledsoe, Handberg, Maddox, Lenox and Long.[11]

Among the factors that may explain the prioritization of places, especially for television coverage, are the physical and financial realities of getting cameras and camera operators to the locations of news events. For example, monitoring studies conducted in the mid-1970s demonstrated that the New York television stations failed to provide adequate news coverage of neighboring New Jersey (as little as 1% to 3% of total coverage). Furthermore, the New York stations rarely covered New Jersey news events located more than an hour's driving time away from their studios, with the exception of state capital-based government stories.[12] On a more philosophical note, Zipf's "principle of least effort" argues the universality of minimizing distance in human endeavors.[13]

Researchers concerned about television coverage of the environment and of health and environmental risk have tended to focus on acute, spectacular and unusual events like the Bhopal chemical disaster in India, the Three-Mile Island nuclear event, the Mount St. Helens eruption, and the Tylenol poisonings.[14] Only Singer and Endreny's analysis of a sample of hazard stories covered in 1960 and 1984 by television and other media included a wide variety of types of risk stories.[15]

This study identified every environmental risk story shown by ABC, CBS and NBC on their nightly news broadcasts during the 26-month period January 1984 through February 1986. It examines the extent to which the relative degree of risk affects coverage, compared to the availability of dramatic visual images (the stuff that television is made of) and the distance from the camera operator's starting point to the news event (which may be due to convenience or other factors). Furthermore, it examines the similarities and differences in coverage provided by the three

[8] See for example, William Ruckelshaus, "Risk Communication," *Chemtech*, September 1986, pp. 533-535; Milton Russell, Speech presented before workshop on reporting of health risk information by television, Columbia School of Journalism, April 22, 1986; T. K. Smith, "Understanding Health Risks Is a Story on Everyone's Beat," *The Point Is ...*, Dow Chemical Company, no. 96, September 1986; Conservation Foundation, "Do the Media Too Often Miss the Message?" *Conservation Foundation Letter*, January, 1979; Harold I. Sharlin, "EDB: A Case Study in Communicating Risk," *Risk Analysis*, 6:61-68 (1986).

[9] Peter M. Sandman, David B. Sachsman, Michael R. Greenberg, and Michael Gochfeld, *Environmental Risk and the Press* (New Brunswick, N.J.: Transaction Press, 1987).

[10] William C. Adams, "Whose Lives Count?: TV Coverage of Natural Disasters," *Journal of Communication*, Spring 1986, pp. 113-122. On the other hand, Gaddy and Tanjong found that earthquake coverage was not clearly biased against the third world [Gary D. Gaddy and Enoh Tanjong, "Testing Geographical Bias in International News: Earthquake Coverage by the Western Press," *Journal of Communication*, Spring 1986, pp. 105-112.].

[11] Peter J. Boyer, "Famine in Ethiopia," *Washington Journalism Review*, January 1985, pp. 18-21; Lee Wilkins, *Shared Vulnerability: The Media and American Perception of the Bhopal Disaster* (New York: Greenwood Press, 1987); Robert L. Bledsoe, Roger Handberg, William S. Maddox, David R. Lenox, and Dennis A. Long, "Foreign Affairs Coverage in Elite and Mass Periodicals," *Journalism Quarterly*, 59:471-474 (Autumn 1982).

[12] David B. Sachsman and Barry Orton, "Proposal for Improving Television Coverage of New Jersey." Proposal submitted to the Federal Communications Commission in the matter of petition for inquiry into the need for adequate television service for the State of New Jersey (Docket No. 20350, RM-2345), and also submitted to the New Jersey State Senate Commission to study the adequacy of television coverage in New Jersey (March 1985).

[13] George K. Zipf, *Human Behavior and the Principle of Least Effort* (New York: Hafner Publishing Company, 1949).

[14] See Wilkins, *loc. cit.*; Nimmo and Combs, *loc. cit.*; Dorothy Nelkin, *Selling Science: How the Press Covers Science and Technology* (New York: W. H. Freeman and Co., 1987).

[15] Eleanor Singer and Phyllis Endreny, "Reporting Hazards: Their Benefits and Costs," *Journal of Communication*, Summer 1987, pp. 10-26.

networks. The following questions and issues guided the research.

1) How much does the availability of dramatic visual images (as well as the traditional definitions of newsworthiness[16]) guide news selection at the expense of the actual scientific degree of risk? How much coverage was there of obviously dangerous, but not visually compelling risks (e.g., smoking tobacco), compared to hazards which offer dramatic scenes (e.g., Bhopal chemical incident)? The hypothesis was that coverage disproportionately focused on the visual and dramatic.

2) How much does geography guide news selection at the expense of risk? To the extent that television chose to cover a type of environmental risk (e.g., oil/gas releases) did it cover the most serious events? Or, minimizing the difficulties and the costs of covering a story, did the nightly news broadcasts feature the cases that were closest to the location of the camera operators?

While no legitimate news value could excuse the New York stations' failure to cover New Jersey—this was fundamentally a case of convenience—proximity and prominence are two traditional determinants of news[17] that may sometimes explain why local, urban-based television stations tend to focus their coverage on the big city rather than the countryside. Furthermore, more people are potentially affected (the news value of consequence) by a less serious hazard in a big city than a more serious one in a small town. Finally, journalists are more likely to find out about nearby stories than distant ones and to have the source contacts to cover them effectively. In other words, the most serious risk incidents—the ones most important to scientists—can be legitimately deemphasized, at least by local television stations, in favor of nearby ones. But these arguments favoring local news coverage wash much less well when it comes to network television, the eyes of the entire nation.

3) How much do the networks differ in their coverage of these issues? We expected the networks to provide similar coverage of uncommon, visual and dramatic environmental risk stories. After all, every network had to assign major resources to cover the Bhopal chemical tragedy. On the other hand, we expected to see differences in coverage among ABC, CBS and NBC regarding mundane, albeit hazardous, public health and environmental risks, like smoking and asbestos.

Method

Since August 5, 1968, Vanderbilt University has abstracted and indexed every story in the network early evening newscasts. The published abstracts of the Vanderbilt *Television News Index and Abstracts* were the data for this research.

We chose a 26-month study period—January 1984 through February 1986—for analysis of the abstracts. This time period was short enough to be a manageable size for exploratory research and long enough to include a variety of environmental risk stories. Story length, the number and types of sources and reporters, and other data can be obtained from each abstract. The descriptions of the stories are sufficient to allow determination of the topics covered.

For the purposes of this research, we defined environmental risk as manmade chemical, biological and physical agents that create risk in the indoor, outdoor and occupational environments. Thus, we excluded genetic predisposition to disease, ergonomic hazards (e.g., back injuries), and lifestyle factors (e.g., smoking).

For coding and organizational purposes, we created 12 environmental risk categories. Three were single-issue categories where we expected major coverage (acid rain, Bhopal gas leak, dioxin/Agent Orange), five were topical categories (hazardous waste, oil/gas releases, pesticides/fungicides, radioactivity, toxic chemical pollution), and four were broader categories (other air pollution, other cancer/teratogen/mutagen, other water pollution, other manmade hazardous/toxic substances). For this discussion, we focus

[16] Curtis MacDougall, *Interpretative Reporting*, 7th edition (New York: MacMillan, 1977).

[17] MacDougall, *op. cit.*

on acid rain, asbestos, the Bhopal gas leak, hazardous waste, oil/gas releases, and the total number of environmental risk stories.[18]

For comparison with network television coverage of environmental risk issues, we analyzed four other risks: earthquakes, airplane safety and accidents, smoking/tobacco and endangered species. These four provided independent yardsticks against which to measure the coverage of environmental risk and test our hypotheses.

The earthquakes that struck Mexico City in 1985 received much media attention, as did the Bhopal chemical disaster, and as do airplane accidents. We grouped the three together to illustrate visual and dramatic stories that were expected to receive a great deal of coverage. Airplane accidents, in fact, are a dramatic, visual "set piece" for television journalists. Reporters are assigned to get harsh visual images of the crash and poignant scenes of family members caught in deep personal despair. We expected the coverage of Bhopal, the Mexico City earthquake, and airplane accidents to vary little from network to network.

Smoking tobacco represents a lifestyle risk that far exceeds all other risks in our study.[19] However, smoking is a mundane, familiar risk and does not produce dramatic images for the camera. Asbestos is an environmental health risk analogous to smoking—it is very hazardous, but offers relatively little potential for drama.[20] Thus, while smoking and asbestos are major health hazards, we expected television coverage of them to be limited. Further, we expected sizeable differences in network coverage. We also expected network differences—and little coverage—regarding acid rain and endangered species, issues without obvious human health risks.

We assessed coverage of environmental risk, smoking/tobacco, earthquakes, endangered species and airplane accident stories in terms of the number of stories, length of the stories, number of sources shown on the air, number of film reports produced and number of field reporters used in the coverage. (For our purposes, the network anchors who read stories and introduce reports and films were not counted as reporters.)

Each Vanderbilt abstract of every network evening news story for the 26-month time period was read and tested against our definitions to determine whether or not it concerned an environmental risk or one of the other four risk issues. In a pretest, two coders achieved 90% reliability on story selection, 100% on which risk category a story belonged in, and 88% on number of reporters. For the full content analysis, one coder read the abstracts from the odd-numbered months, while the other read the abstracts from the even-numbered months. Since it was possible that a story might cover more than one subject, we prepared two coding sheets for such stories and split the time, sources, etc. Only four mixed stories were found. Our data set was the universe—not a sample—of all the story abstracts concerning environmental risk and the other risk issues studied for 26 months. Therefore, sample statistical testing was done only when we evaluated samples of the data.

[18] An emission of methyl isocyanate occurred in Bhopal, India on Dec. 3, 1984. Approximately 2,000 people were killed and another 200,000 injured. More recent estimates suggest that the death toll may be in the tens of thousands. Acid rain includes discussions of the environmental impacts of rain with a low pH, as well as the political implications of acid rain. In 1984-1986, the major asbestos stories were about asbestos in schools and the spread of asbestos because of improper demolition practices. Hazardous waste stories were about toxic waste landfills; damage resulting from leaks into ground and surface water bodies; possible health effects in Woburn, Massachusetts; Riverside, California; Niagara Falls, New York; etc; organized crime and dumping, and U.S. EPA rules for disposal. Oil/gas releases include oil and natural gas spills, leaks, or explosions, fuel tanker accidents, oil refinery fires, etc.

[19] The vast majority of smoking/tobacco stories were about smoking tobacco, but a few were about chewing tobacco. See U.S. Department of Health, Education, and Welfare, *Smoking and Health: A Report of the Surgeon General* (Washington, D.C.: U.S. Government Printing Office, 1979) for estimates of the impact of smoking on health. For comparative estimates see Richard Wilson, "Analyzing the Daily Risks of Life," *Technology Review*, 81:40-46 (1979); Bernard L. Cohen and I-Sing Lee, "A Catalog of Risks," *Health Physics*, 36:707-722 (1979); Edmund A. C. Crouch and Richard Wilson, *Risk/Benefit Analysis* (Cambridge, Mass.: Ballinger Press, 1982).

[20] The consensus is that 1,000-10,000 Americans die each year because of exposure to asbestos. See for example, Sir Richard Doll and Richard Peto, *The Causes of Cancer* (New York: Oxford University Press, 1981). Dr. Howard Kipen, Assistant Professor of Environmental and Community Medicine, UMDNJ—Robert Wood Johnson Medical School has published papers on asbestos and estimates the number at 9,000. We used Dr. Kipen's estimate.

For our analysis of whether the networks featured stories that were closest to the location of camera operators, we excluded foreign stories. Only 13% of the environmental risk stories originated in foreign locations, including Bhopal—which supports the thesis—but by eliminating foreign stories, we controlled for the effects of cultural proximity.[21]

The three networks had major broadcast centers and/or news bureaus in Atlanta, Boston, Chicago, Denver, Los Angeles/Burbank, Miami, New York City, San Francisco, and Washington, D.C. during the study period. Two had them in Dallas; one in Houston. For purposes of the analysis, we call these cities "news centers" and their states—Georgia, Massachusetts, Illinois, Colorado, California, Florida, New York and Texas—"news-center states."

Results

Environmental and other risk stories. The major networks presented 564 environmental risk stories during the 26-month study period, an average of five a week or one in every four nightly news broadcasts (Table 1). Environmental risk news consumed 13.8 hours or 1.7% of total nightly news air time.

Forty-five percent of the stories were 30 seconds or less, 5% were 40-60 seconds, 43% were 70 seconds to four minutes, and 7% were longer than four minutes. Half of the stories had no field reporters and 46% had one. Only four percent used two or more field reporters. There were 863 on-air sources, an average of 1.53 per story. One-third of the environmental risk stories showed no sources, one-fourth had one, and 42% showed two or more. Two hundred and sixty-one film reports from location were shown (e.g., a fire burning, aerial shot of manufacturing plant, etc.), or about one film shown for every two stories.

[21] See Adams, *loc. cit.*

[22] See U.S. Department of Health, Education, and Welfare, *loc. cit.*

[23] See Kipen, *loc. cit.*

[24] U.S. Bureau of the Census, *Statistical Abstract of the United States: 1987* (Washington, D.C.: U.S. Government Printing Office, 1986).

Table 1 includes summary data for all 564 environmental risk stories, five environmental risk case studies (Bhopal gas leak, asbestos, acid rain, hazardous waste, oil/gas releases), and four other risks (Mexico City earthquake, airplane accidents, smoking/tobacco, endangered species).

Broadcast newsworthiness versus risk. To compare broadcast news values with scientific degrees of risk, we point to the contrast between coverage of Bhopal, the Mexico City earthquake and airplane safety and accidents, and coverage of asbestos, acid rain, smoking/tobacco and endangered species.

As expected, there was much greater coverage of airplane accidents, Bhopal and the Mexico City earthquake than of asbestos, smoking/tobacco, acid rain and endangered species. The networks showed about 11 1/2 hours of airplane safety and accident stories. The 482 airplane stories dwarfed the 123 stories and 3.7 hours devoted to smoking/tobacco, asbestos, acid rain, and endangered species (Table 1). There was almost as much coverage of airplane accidents as of all environmental risk stories combined—482 stories versus 564, and 11.5 hours versus 13.8. There were huge differences in film use. The Mexico City earthquake averaged 1.33 films per story, Bhopal 0.57, and airplane safety and accidents 0.55. Endangered species stories used 0.69 films (these stories really require film), but acid rain used only 0.32 films per story, asbestos only 0.27, and smoking/tobacco 0.19. The broadcast newsworthiness of the three dramatic stories was apparent across our indicators (Table 1).

To put this coverage in perspective—in terms of scientific degree of risk—it is estimated that 350,000 Americans annually die from smoking tobacco,[22] and 9,000 from asbestos exposure.[23] The average annual number of deaths from all airplane accidents in the United States in 1975, 1980, and 1985 was 220.[24] If coverage matched risk (measured by total number of deaths), then there should have been 26.5 minutes on smoking and 41 seconds about asbestos for each second

TABLE 1

Summary Data About Environmental and Selected Other Risk Coverage by the Networks on the Nightly Evening News

Story	Number of Stories	Total Minutes	%≥ 2 Mins.	Avg. No. field reporters	Avg. No. on-air sources[a]	Avg. No. films
All Environmental Risk	564	830.7	35	0.55	1.53	0.46
Bhopal	61	146.8	61	0.88	2.25	0.57
Asbestos	15	24.1	27	0.60	1.60	0.27
Acid rain	19	25.5	37	0.47	1.32	0.32
Hazardous waste	28	43.4	45	0.46	1.89	0.25
Oil/gas releases	117	105.2	14	0.21	0.60	0.79
Mexico City earthquake	52	170.2	69	1.06	1.71	1.33
Airplane accidents	482	687.8	32	0.53	1.27	0.55
Smoking/tobacco	57	97.2	48	0.61	1.95	0.19
Endangered species	32	73.3	64	0.84	1.69	0.69

[a]On-air sources are actually shown on the air. Other sources are quoted or cited.

devoted to airplane accidents. Instead, there was seven times as much coverage of airplane accidents as there was of smoking/tobacco, and 29 times as much coverage of airplane accidents as there was of asbestos.

The Bhopal chemical and Mexico City earthquake disasters were estimated to have killed 2,000 Indians and 5,500 Mexicans in 1984 and 1985. We estimate that in those two years 718,000 Americans died from smoking tobacco and from asbestos-related diseases—that is, almost 100 times as many people. Yet, Bhopal and Mexico City coverage was 2.6 times as much as smoking/tobacco and asbestos coverage. Underscoring the broadcast unnewsworthiness of the deadly but dull public health risks was the fact that there was only 23% more coverage of smoking and asbestos than of acid rain and endangered species, issues without substantial human health implications. Thus the deadly and dull receive only a bit more coverage than the dull but not deadly.

Geography versus risk. To compare the geography of network news coverage with the scientific degree of risk, we needed risks that appear in many locations. A national problem like the exposure of Vietnam veterans to Agent Orange was not appropriate because reporting was done from Washington, D.C. and New York. A local question, like methyl isocyanate production at Institute, W.Va., was reported from the site and one or two other locations.

We chose hazardous waste sites (toxic landfills, etc.) and oil/gas releases (spills, leaks, etc.). Eighteen hazardous waste stories and 86 oil/gas release stories reported environmental risks at specific locations. These 104 news items represented 18% of the environmental risk stories.

Congress passed the Comprehensive Environmental Response, Compensation, and Liability Act (or Superfund) in 1980 and reauthorized it in 1986. Two of Superfund's first tasks were to determine the number of hazardous waste sites and to prioritize them. More than 24,000 sites and 888 priority sites were listed by 1986.[25] Twenty-nine percent (256 of 888) were located in the news-center states, eight states where the networks had major broadcast centers and/or news bureaus. Thirteen of the 18 hazardous waste stories (72%) were in news-center states. The ratio of the percentage of televised stories to the

[25] U.S. Environmental Protection Agency, *National Priorities List Fact Book, June 1986* (Washington, D.C.: U.S. Environmental Protection Agency, 1986).

percentage of actual Superfund sites in news-center states was 2.48 (72:29). In other words, the networks were much more likely to cover hazardous waste stories in news-center states.

But many of the 24,000 sites and 888 priority sites were added to the Superfund list during our study period. Therefore, we compared the sites covered by the nightly news with the Environmental Protection Agency's (EPA) initial list of 112 priority sites.[26] The average airline distance from the nearest news center to the 12 locations covered in the 18 televised stories was 133 miles. The average distance of the initial 112 priority sites from a news center was 192 miles—71% more, a difference significant at $p<.05$.

The comparison of the 12 televised sites and the 112 EPA sites could be misleading because every state was permitted to have one site among the first 100 priority sites. Because the top of the priority list was not based solely on risk, we used in addition the first 20 sites chosen for pre-Superfund engineering studies and cleanup.[27] The average distance of the 20 pre-Superfund sites from a news center was 239 miles, almost twice as far as the 12 shown on the nightly news, a difference statistically significant at $p<.05$.

Regarding oil/gas releases, the Department of Transportation's National Response Center collected data about truck, rail, pipeline, barge, airplane, and ship accidents that released chemicals during 1984-1985 (24 months of our 26-month period).[28] Thirty-six percent were on land or in waters adjacent to the news-center states.

Census data reported 37% of the value added by chemicals was produced in these news-center states, as were 48% of the petroleum and coal products, and 33% of the fuel purchased by industry.[29] In other words, a little more than one-third of both the accidents and the potential for accidents were in these news-center states.

Seventy-three percent (63 of 86) of the nightly news oil/gas release stories about specific locations came from the news-center states. The ratio of the percentage of televised stories to the percentage of accidents in news-center states was 2.03 (73:36). This finding for oil/gas-release coverage corresponds with the finding for hazardous-waste reporting. The networks are about twice as likely to cover an environmental risk problem that is within a news-center state as one not near a news center. Factors other than the degree of risk or the traditional determinants of news (timeliness, proximity, prominence, consequence and human interest)[30] appear to be affecting this coverage—geographical considerations such as cost, time and convenience.

Was the geographical distribution of ABC's, CBS's and NBC's local affiliate stations related to the networks' airing of environmental risk stories? To answer this question, we had to eliminate stories reported exclusively from news centers, and those reported by two or three networks (big stories they had to cover on site). Only 55 stories, less than 10%, were carried by a single network and had on-site reporting. CBS carried more than half of them (28), NBC 30% (17), and ABC 18% (10). The location of an affiliate was not associated with a higher probability of coverage. Fifteen of the 55 single-network stories were covered in towns where at least one network had an affiliate. ABC had affiliates in 12 of the 15 cities, but carried only three of the 15 stories, and one of the three was in a market where it did not have an affiliate. NBC and CBS had affiliates in 11 of the 15. Each ran six of the 15 stories, and each presented two stories in cities with no affiliates.

Network Similarities and Differences. As hypothesized, the networks provided

[26] Michael R. Greenberg and Richard F. Anderson, *Hazardous Waste Sites: The Credibility Gap* (New Brunswick, N.J.: Center for Urban Policy Research, 1984). There were a few sites outside the United States (e.g., Guam, Saipan); we did not include them in our analysis because of their great distances from American news centers.

[27] Greenberg and Anderson, *op. cit.*

[28] U.S. Department of Transportation, National Response Center provided us with a printout of their data.

[29] U.S. Bureau of the Census, *1982 Census of Manufactures, Fuels and Electric Energy Consumed* (Washington, D.C.: Superintendent of Documents, 1982); U.S. Bureau of the Census, *Census of Manufactures, Geographic Series* (Washington, D.C.: Superintendent of Documents, 1982); U.S. Bureau of the Census, *Census of Transportation, Selected Statistics* (Washington, D.C.: Superintendent of Documents, 1982).

[30] See MacDougall, *loc. cit.*

TABLE 2

Comparison of Nightly News Coverage Among Networks of Selected Risk Topics

Story Type	Story Topic	*Most Coverage* Network	Minutes	*Least Coverage* Network	Minutes	Most/Least (minutes)
Visual/ Dramatic	Bhopal	NBC	58.2	CBS	36.0	1.61
	Mexico City earthquake	NBC	75.0	ABC	46.5	1.62
	Airplane accidents	ABC	254.3	NBC	191.5	1.33
Sum of all three story topics		ABC	353.5	NBC	324.7	1.09
Health Hazard	Smoking/tobacco	CBS	43.0	ABC	23.7	1.81
	Asbestos	CBS	10.2	NBC	4.2	2.43
Sum of both story topics		CBS	53.2	ABC	33.4	1.59
Environmental Hazard	Acid rain	CBS	15.3	ABC	0.5	30.60
	Endangered species	CBS	34.3	NBC	12.3	2.79
Sum of both story topics		CBS	49.6	NBC	22.0	2.25

similar coverage of the three visual and dramatic risk stories (Bhopal, the earthquake, and airplane accidents) but not of smoking/tobacco, asbestos, acid rain or endangered species. Overall, ABC had the most coverage of the three dramatic stories, 353.5 minutes; CBS, 326.7 minutes; and NBC the least, 324.7 minutes (Table 2).

CBS offered the most coverage of smoking, 43.0 minutes, 81% more air time than ABC's 23.7 minutes (NBC, 30.5 minutes). For asbestos the difference between least and most coverage was 6.0 minutes (CBS, 10.2 minutes; ABC, 9.7; NBC, 4.2). Network differences were even greater with respect to coverage of acid rain and endangered species. CBS devoted 15.3 minutes to acid rain and 34.3 to endangered species; ABC carried only 0.5 minutes on acid rain, but 26.7 on endangered species; and NBC aired 9.7 minutes on acid rain and 12.3 endangered species—percentage differences from least coverage to most coverage that are too large to be meaningful for comparison.

We compared network coverage of all 564 environmental risk stories. In the 26-month period, CBS provided much more environmental risk news than NBC or ABC, 68 more stories than NBC (one hour more), and 109 more than ABC (2.2 hours more) (Table 3).[31]

For CBS, more stories also meant more "different" stories. We defined a "different" story as an event or issue covered by one or more of the networks for one or more days. Of the 564 environmental risk stories in the study period, there were 279 "different" stories (the rest being follow-ups or the same story on several networks). CBS covered 71% of the 279, NBC 46%, and ABC 37%. A month-by-month analysis confirms the finding. CBS showed the most environmental risk stories in 20 of the 26 months, and the least in only two. ABC showed the most in four and the least in 20. NBC ranked second in almost every month.

Sixteen percent of the 279 different stories (44) were covered by all three networks, 22% (61) by two, and 62% (174) by one network. CBS showed 59% (103) of the single-network stories, NBC 25% (44), and ABC 16% (27).

Yet the difference between CBS and the others in amount of coverage does not reflect a difference in the techniques of coverage. The aggregates in Table 3 show

[31] These differences cannot be explained by the number of days without news broadcasts. ABC did not carry early evening news programs on 88 days (11 percent of the days), CBS on 71 days (nine percent), and NBC on 46 days (six percent).

TABLE 3

Comparison of ABC, CBS, and NBC Nightly News Coverage of all Environmental Risk Topics

Variable	ABC	CBS	NBC	Total
Environmental risk stories				
Number	138	247	179	564 stories
percentage	24%	44%	32%	100%
Total time				
Hours	3.46	5.68	4.71	13.85 hours
percentage	25%	41%	34%	100%
$\bar{X}$ length of story, seconds	92	82	94	88 seconds
Field reporters				
% of stories with at least one reporter	54%	46%	53%	
% with at least two	5%	2%	6%	
$\bar{X}$ number of on-air sources per story	1.68	1.43	1.50	1.53
$\bar{X}$ number of films per story	0.48	0.46	0.46	0.46

strong similarities in story length, number of field reporters, on-air sources and films.

Furthermore, a time-series analysis suggests parallel coverage during the 26 months. We divided the 564 environmental risk stories into nine time periods and calculated for each period the average daily number of stories per newscast and average story length. If network coverage was homogeneous, responding similarly to external events, the networks' average daily number of stories should be correlated, as well as their average story lengths—in other words, when one network presented many long stories, the others would have done the same.

Using Spearman rank correlations because there were only nine time periods, we found strong correlations: in stories per newscast, 0.87 between ABC and CBS, 0.88 between ABC and NBC, and 0.88 between CBS and NBC; in average story length, 0.70 between ABC and CBS, 0.73 between ABC and NBC, and 0.93 between NBC and CBS.

Also, when more than one network covered a story, the networks' coverage was mostly on the same day (71% for two networks, 66% for three), and was about the same length. We found 157 story-length matches in these cases where only 85.4 matches would have been expected by chance. We used the Kappa statistic[32] to evaluate the extent of agreement, and found Kappa values for the two- and three-network stories of 0.478 and 0.498, values significant at $p<.001$.

[32] Jerome B. Cohen, "A Coefficient of Agreement for Nominal Scales," *Educational and Psychological Measurement*, 20:37-46 (1960). A Kappa value of 1.0 means perfect agreement.

Discussion

In their coverage of environmental risk, the networks are guided more by the traditional determinants of news and the availability of dramatic visual images than by the scientific degree of risk of the situation involved. They are also guided in their coverage by geographical factors (such as cost and convenience) much more than by risk, and apparently sometimes more than by their own broadcast news values.

While CBS provided the most risk coverage and ABC the least, the networks are similar in their patterns of coverage: big, dramatic stories get a lot of coverage from all three networks, while routine stories are covered briefly and often by only one network. The networks behave similarly in terms of length of stories, number of field reporters, and use of sources. Indeed, the strongest similarity is that the three networks all covered the visual and dramatic environmental risks and did not provide much coverage of mundane ones.

Is the lack of correspondence between coverage and risk important? Broadcasting's news values (the traditional determinants of news with emphasis on the visual and dramatic) have withstood the test of time. The American public was well served

by television's film images of birds coated with oil from the Santa Barbara spill. Nevertheless, the disproportionate coverage—from the scientific perspective on risk—of chemical incidents, earthquakes, and airplane accidents probably reinforces the public's well-documented tendency to overestimate sudden and violent risks and underestimate chronic ones.[33] The public needs a steady stream of stories on the hazards of asbestos, smoking, alcoholism, and even sunbathing.

When geographical factors are used to determine coverage—instead of risk or even broadcast news values—it can be a serious problem. A disproportionate number of environmental risk stories come from news-center states, especially California, Massachusetts, New York, and Texas. The Department of Transportation's National Response Center reported 387 oil/chemical spills in these four states in 1984 and 1985, while an equivalent number, 389, were reported in Alabama, Louisiana, Mississippi, and West Virginia.[34] Yet almost three times as many oil/gas stories were reported from the four news-center states as from the other four.[35] The environmental protection programs of the four news-center states are stronger in general than those of the other four states.[36] Drawing a disproportionate share of stories from states with strong programs probably reinforces the strong programs in those states. And ignoring events in states with weak environmental programs cannot help but reinforce the status quo in those states. These are the unplanned results of the networks' addition of geography to the traditional determinants of news. Geographical factors such as cost and convenience should not interfere with the networks' own stated standards.

[33] Paul Slovic, "Perception of Risk," *Science*, April 17, 1987, pp. 280-285.

[34] U.S. Department of Transportation, National Response Center provided us with a printout of their data.

[35] The actual ratio was 2.86.

[36] Christopher J. Duerksen, *Environmental Regulation of Industrial Plant Siting* (Washington, D.C.: Conservation Foundation, 1983).

Video News Releases Show Impact

Nationwide response to a toll-free telephone number included as part of a video news release (VNR) provided further evidence of the impact of VNRs in reaching television viewers across the country.

Medialink, the nation's largest distributor of video news releases, reported that a VNR transmitted by the company via satellite to television newsrooms in March and April helped to generate more than 30,000 telephone calls to a toll-free 800 number included as part of the video.

The VNR, issued by the Washington, D.C., division of Hill and Knowlton, the international public relations firm, announced the formation of the "Joint Movement Against Rheumatoid Arthritis," a program of the Arthritis Foundation, and included the toll-free number for viewers wishing further information about arthritis.

The VNR was first aired in late March as a 13-minute segment of "Medical Update," a television news feature syndicated monthly to 40 television stations by Alliance Productions, Dallas. During the weeks that the feature was aired more than 10,000 telephone calls were made to the 800 telephone number included in the VNR. An April 25 airing to 750 TV newsrooms was followed by 20,000 calls.