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Developments in Emergency Preparedness

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Do emergency plans leave doubt about the existence of intelligent life on the planet earth?

While few would be so critical, the 57 experts assembled in Gettysburg on the 6th and 7th of September left little doubt that there is ample room for improvement. *Partially as a result of the expanding role of nuclear power, improvements (or at least major changes) are being made in every facet of the subject. A useful progress report on these new developments was provided by the Radiological Emergency Preparedness Symposium chaired by Charles Willis with the assistance of Stephen McGuire both of the AEC's Standards Directorate.

Participation was excellent even though Thomas Ippolito's AEC committee on instrumentation was not represented and Marshall Sanders of the Federal Disaster Assistance Administration was unable to attend. There also is an Interagency committee on instrumentation chaired by Herv Brown, Director of the AEC office of Government Liaison.

The FDAA Report was presented by H. E.

* This paper is an informal summary of the Symposium; it does not present any agency's official position and it has not been approved by the speakers. The Symposium was sponsored by the Baltimore-Washington Chapter of the Health Physics Society.

"Doc" Collins of the AEC Office of Government Liaison. Two important items were that (i) the agency has funds for general (including nuclear) emergency planning by the states but it has not completed the "enabling regulations" necessary for actually granting the money and (ii) the agency is relinquishing its "monitoring" role in emergency planning.

Ernest C. Anderson reported that the Bureau of Radiological Health submitted recommendations to the Bureau of Foods on radionuclide concentrations in foods; since the recommendations have not been adopted the values were not presented but it was noted that they are based on the old Federal Radiation Council recommendations. DHEW recommendations on the use of stable iodine to reduce thyroid uptake of radioiodine will be based in part on the conclusions of Eugene Sanger's NCRP subcommittee; their draft report favors making stable iodine available for blocking. Emergency Medical Service grants are being made (85 in 1974) for both planning and program improvement.

Carl Siebentritt, Defense Civil Preparedness Agency, reported that his interagency task force on training has concluded that state and local emergency response plans are generally inadequate and that training merits a high priority in the necessary efforts to improve

these plans. Serious needs for training were found at all levels; Federal, state and local governments as well as "first at the scene" people such as fire, police, medical, etc. need training. The direct cost of the recommended training program was estimated at 3.5 mega-bucks spent over a five-year period.

According to "Doc" Collins, the AEC Government Liaison Office's "cajoletive" efforts to improve state emergency plans will soon produce a revised guide. The AEC provides guidance for and reviews state programs but has no authority over them. Progress depends upon cooperation. Still, the guide will play a major role in shaping state programs so it should be reviewed carefully and critically by everyone with emergency preparedness responsibilities; draft copies will be available for review from Mr. Collins.

Unlike the state program, the AEC has approval authority over the emergency plans of licensees. This activity is also being thoroughly reevaluated. Wayne Houston, Chief of the AEC's Industrial Security and Emergency Planning Branch, reported that the new "Standard Review Plan" is being designed to make review of emergency plans as independent as practicable from the accident analyses. This permits parallel, rather than sequential, review. Thus the approach is to base the emergency plan evaluation on assumed conditions at the site boundary corresponding to the 10 CFR Part 100 criteria. It follows that the ratio of the Part 100 criteria to the EPA's "protective action guides" will determine the distance for which protective action (evacuation) must be planned; if the ratio is 30 (300 vs 10 rems thyroid) this distance could be about 8 miles.

The critical role of the EPS's protective action guides is obvious. Dave Smith, Chief of the EPS's Analytical Criteria Branch, could not make public the numerical values of the

guides now being proposed as they have not been reviewed by the other agencies. He did make it clear that proposed PAG values are well (but not necessarily a factor of 30) below the Part 100 values and on the order of the existing PAG values developed by the Federal Radiation Council. The new PAG's will be specifically for gaseous releases from nuclear facilities so they will be whole body and thyroid dose criteria. The EPA estimated evacuation costs at about \$30.00 per day and risk as on the order of that from 0.5 rem. If a value of \$50.00 per man-rem is assumed, evacuation appears reasonable to avoid relatively small doses.

Joe Logsdon, Deputy Chief of the EPA's Protective Action Planning Branch, reported that a preliminary draft of the emergency manual has been completed and reviewed by other agencies. It includes guidance on calculating doses, the value of various protective actions, and the implementation of evacuation procedures as well as sample plans.

The AEC and the interagency radiological assistance programs (RAP and IRAP), as described by Gerald Combs of the AEC's Emergency Preparedness Branch, are functioning effectively. Whenever practicable, requests for assistance are handled by giving advice or referring the problem to state agencies. When necessary, specialists are sent to the scene; in the last decade people were dispatched 488 times in handling 747 incidents. In addition to the 700 AEC and contractor employees with emergency team assignments, an additional group of about 10,000 could be called on for support. Further, some 2,800 military personnel have been trained and assigned to duty on emergency teams. Interagency agreements make available the resources of other agencies if they were ever needed. Local people must cope with the first few hours but expert help

is available.

Jim Goodwin, Executive Director of the Southern Interstate Nuclear Board, reported that the states face formidable problems in preparing for radiological emergencies. The basic problem is in demonstrating a need when there is neither a legislative requirement nor a history of injury. This produces a lack of funds and therefore a shortage of both qualified people and equipment. The combining of resources in the "compact" of Southern states promises to provide the essential capability for handling accidents at "fixed nuclear facilities". The capability to cope with transportation accidents, however, does not exist.

The transportation accident problem was addressed directly by Al Grella, Chief of the Office of Hazardous Materials, DOT. Generally, the DOT shares the state's problem of demonstrating a need for increased attention to radiation. Great quantities of equally or more hazardous materials are being shipped with controls no more stringent than those for radioactive materials. Significant changes in the regulations, including packaging and labelling requirements, are being made. The nuclear community should investigate these changes and comment. Congressional action is in progress on legislation that cries for attention; it would largely prohibit shipment of radioactive materials by air. Considering the record, the impact on nuclear medicine and the possible alternatives, this proposed legal action might seem to be a serious over-reaction to the regrettable Delta incidents.

Charles Willis opened the Symposium by calling for perspective about radiation hazards considering the record (Table 1) and exhorting the audience to ask the difficult questions. His colleague Dr. McGuire continued in this vein by concluding the Symposium with a few general questions. He asked for the explicit

goals of emergency planning, the accidents to be coped with and the elements of a good emergency plan. These questions engendered responses and discussion that lasted at least an hour and got somewhat "*ad hominem*". They did not elicit explicit answers. Perhaps the revitalization of emergency preparedness has not included a clear statement of the goals or a cost-benefit evaluation of effectiveness.

Table 1. Fatalities In Some Major Disasters

I. Natural		
A. Epidemics		
1. Influenza, World, 1917-1919		30 million
2. Bubonic Plague, Europe, 1340's		25 million
3. Cholera, World, 1826-1837		10 million
B. Floods & Storms		
1. China, 1887		990 thousand
2. China, 1881		300 thousand
3. Galveston, 1900*		6 thousand
4. Johnstown, 1889*		2 thousand
C. Earthquake		
1. China		800 thousand
2. Tokyo, 1923		200 thousand
D. Volcano		
1. Indonesia, 1883		36 thousand
2. Indonesia, 1815		12 thousand
3. Vesuvius, 1631		4 thousand
4. Pompeii, 79		2 thousand
E. Fire**		
1. Santiago, Chile, 1863		2 thousand
2. Nova Scotia, 1917		1.4 thousand
3. Pestigo, Wisconsin, 1871		1.2 thousand
F. Avalanche		
1. Mt. Huscaran, Peru, 1962		3 thousand
II. Technological		
A. Marine		
1. "Provence", 1916		3,100
2. "Sultana", 1865		1,547
3. "Titanic", 1912		1,517
B. Explosion		
1. Dynamite, Columbia, 1956		1,200+
2. Ammonium Nitrite, Germany, 1921		600+
3. Ship, Texas City, 1947		561+

4. Natural Gas, New London, Tex. 1937	400+		
C. Mine			
1. France, 1906	1,060		
2. Omuta, Japan, 1963	446		
3. Monongah, West Va., 1907	361		
D. Rail			
1. Spain, 1944	650		
2. France, 1917	550		
3. Italy, 1944 (Suffocation)	526		
E. Aircraft			
1. DC-10, Paris, 1974	345		
2. DC-9, Venezuela, 1969	154		
3. DC-8 & Super Constellation, N. Y., 1960	134		
4. Boeing, 727, Tokyo, 1966	133		
		■. Radiation Associated	
		A. Theoretical	
		1. WASH-740 Maximum	3,400
		2. Rasmussen Study: One per billion reactor-years	1,400
		B. Real	
		1. Cleveland, 1925, X-ray Film Fire	125
		2. Mexico, 1962, Lost Co-60 source	5
		3. Idaho, 1961, SL-1	3
		* Relatively minor, included here because it is well known. The September 1974 storm in Honduras reportedly caused over 5,000 deaths.	
		** Fatality estimates are not available for the most disastrous fires, such as Rome 64 AD.	