

PUBLIC SAFETY

Expense of Civil Defense

The multimillion dollars spent on civil defense will, it is hoped, be an absolute waste of money. Scientists are divided as to value of the shelter program in saving lives.

By CHARLES A. BETTS

► THE STORY of civil defense is one of multimillion dollar expenditures and detailed, comprehensive planning, all of which everybody hopes will be an absolute waste of time and money.

Whether the time, money and effort expended in this program since World War II should ever have been spent at all has been a running controversy for years.

Public evaluation of the worth varies depending on the heat of the international situation at any given time. Politicians by and large go along with the public pulse. But even scientists themselves are divided on whether a significant number of lives could be saved by a shelter program.

"Yes," say Office of Civil Defense technical advisers.

"Yes," says a study group of the National Academy of Sciences.

"No," says the scientific advisory board of the Committee for Nuclear Information.

What, then, can the layman believe? This Science Service feature is a progress report with the pros and cons.

Like it or not, civil defense has grown into a mature, well established arm of the Defense Department. Its budget for fiscal 1966 is approximately \$194 million. It has strong policy support from President Lyndon B. Johnson and Defense Secretary Robert S. McNamara.

Nationwide Shelter System

The core of the program is a nationwide fallout shelter system. When a nuclear fireball touches the ground, thousands of tons of matter are sucked high into the air, forming an intensely radioactive cloud.

The debris then sifts back down as radioactive fallout particles. The heavier particles settle to earth fairly quickly, and the smaller, lighter ones are carried further downwind and fall more slowly, hour after hour, in a pattern that may extend hundreds of miles.

Recent studies show that following an all-out nuclear attack, fallout radiation could be a significant immediate danger to human life for up to two weeks. By the end of that time, most of the radioactivity would have decreased to acceptable levels.

Back in 1961 a continuing program was initiated to locate and stock potential public fallout shelter space in existing structures. The latest figures this fall show that more than 151,000 structures throughout the United States have been located and classified as suitable for public fallout shelters. About 60% of these are in cities with over 250,000 people and 40% are in smaller communities.

While civil defense officials conclude that this is an excellent nucleus for protecting the population, critics advance convincing counter arguments.

Some Congressional opponents maintain that the public shelter program will not be of very much use to the vast majority of the population. If an attack came at night, the downtown public shelters could be reached only by a very few persons.

"How many," they ask, "would be within reach of a downtown office building shelter at 2 a.m.?"

If an attack come during daytime, detractors point out, the majority of those saved would be working males. Children and most women of child-bearing age would be outside the heart of the metropolis and easy victims of radiation.

In another angle, the Committee for Nuclear Information says that it would take \$50 billion to save 80 million inhabitants, but "hundreds of billions" would be necessary to shelter, even partially, our productive capacity.

"Any conceivable civil defense program can be nullified by a much less difficult increase in the intensity of the attack."

A vital part of the shelter program is stockpiling food, water, medical supplies, sanitation equipment and radiation detection instruments. In cooperation with the

National Academy, the Department of Health, Education and Welfare and the armed services, civil defense planners have put together a survival package. Shelter supplies must have a minimum shelf-life of five years, although many items are reported good indefinitely.

Cost of this package is \$2.42 per shelter space, which is space for one person. So far under the program, civil defense has procured supplies for 63 million shelter spaces for a total cost of about \$152.5 million.

Here's a breakdown of the contents of one survival unit and how much each item runs:

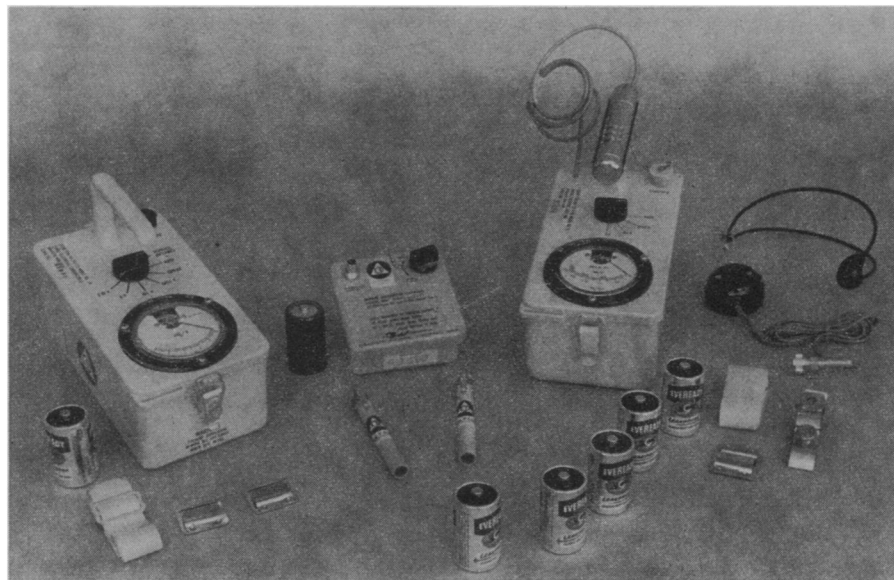
1. Wheat-based biscuit and carbohydrate supplement, 10,000 calories per person \$1.17
2. Steel water containers with liners, convertible to chemical toilets \$0.44
3. Medical kits for non-professional use \$0.25
4. Sanitation kits \$0.17
5. Radiation detection instruments \$0.18
6. Warehousing and transportation costs \$0.21

Critics maintain that, like the basic shelter program, the stockpiling is a ridiculous exercise in futility.

The Committee for Nuclear Information finds that a stocked shelter program "might be harmful to the ultimate survival of the population as a whole and to the nation's recovery."

This group's logic runs like this:

Any appreciable excess in surviving popu-



Office of Civil Defense

RADIATION DETECTORS—Here are just a few of the many devices available for monitoring radiation in the event of a nuclear attack. The cost of such devices ranges from a few cents for the tiny "dosimeter" badges issued by industry to workers who might become exposed during their work, to thousands of dollars for complex, airborne instruments used for measuring residual radiation over whole cities.

lation could not be sustained by the available supplies and facilities. The survivors would compete among themselves for sustenance; some would face death from starvation and neglect. The resultant conflict and social chaos would severely hamper efforts to develop a recovery program and probably lead to the ultimate extinction of a highly organized society.

"Even if it were possible to shelter industry as effectively as population, these preparations would be useless unless some means were found to protect the nation's agricultural lands and the biological stability of the earth's surface from possible irremedial destruction from radiation and fires."

Despite the criticism, the civil defense authorities go right on locating and stocking potential new shelters.

Minor Changes Emphasized

The present program is emphasizing minor construction changes in existing buildings to make them suitable as shelters. For example, low-cost ventilation changes are being recommended in many structures. And civil defense advisers are encouraging the consideration of fallout protection at the design stage of new construction.

In cooperation with the Office of Civil Defense, the Army Corps of Engineers has conducted surveys designed to add to the water supplies in fallout shelters. About 1,000 buildings across the country have been surveyed to determine the amount of water "trapped" in the regular plumbing systems of the buildings.

The surveys showed that the buildings contained on an average trapped water amounting to 28 quarts per shelter space. The minimum public shelter water requirement is 14 quarts per shelter space, for a two-week stay.

In addition to the shelter program, the

GEOPHYSICS

Reduce Earthquake Deaths

► DEATHS FROM EARTHQUAKES can probably be reduced 80% within 10 years.

This great reduction in death tolls could be achieved by a warning system comprised of many delicate instruments in earthquake-prone areas, careful zoning of building sites in cities and suburbs, and use of especially designed building materials and structures.

A large decrease in loss of life and property from earthquakes was predicted in Washington, D.C., by Dr. Frank Press, of the geology department at Massachusetts Institute of Technology. Dr. Press heads a panel set up by President Johnson's Office of Science and Technology after the 1964 Good Friday earthquake in Alaska to study possible methods of predicting earthquakes.

A 10-year program estimated to cost \$137 million was proposed in a report by the panel, whose members include scientists from the California Institute of Technology, Princeton University, the U.S. Geological Survey, the U.S. Coast and Geodetic Survey and the National Science Foundation.

The program would involve setting up

Office of Civil Defense is also deeply involved with warnings and communications networks.

The present Civil Defense Warning System is a combination of Federal, state and local systems. The Federal system is basically an extension of military warning and detection systems. A network would spread the word of an attack to local authorities who have the responsibility for sounding public warning devices.

To maintain communications, an Emergency Broadcast System has been established. This EBS would have two basic responsibilities in an emergency. Authorized commercial broadcasting stations would have the responsibility of getting out basic civil defense instructions to the public. At the same time, the entire communications networks remaining operable would have to be at the disposal of the President in his efforts to resolve the emergency.

Developing the mechanism to meet this dual responsibility—the need to instruct the people without obstructing official negotiations in an emergency—is a fundamental part of the Office of Civil Defense public information program.

Critics of civil defense, specifically the scientific advisory board of the Committee for Nuclear Information and its publication, Scientist and Citizen, appear to believe that false, or at least undetermined, factors are being assumed as truths on which to build a civil defense program. They particularly hit as patently wrong any arbitrary assumptions on the size of any nuclear attack.

They also believe that no clear, scientifically proved case has been made as to the feasibility of civil defense against a nuclear attack, that more study is needed from all sources to arrive at a sound conclusion.

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clusters of such sensitive instruments as tiltmeters, strainmeters and lasers along major geological fault areas in the United States, mainly in California and Alaska. Other instruments would detect subtle yet important changes in the earth's sea level, magnetic field, gravity, electrical conductivity and density of rock.

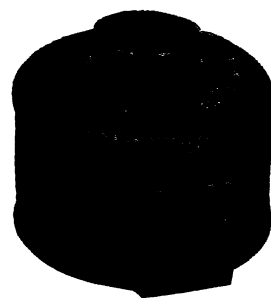
Using new precise instruments and a large-scale approach to checking on earth's many movements, prediction of earthquakes is now a foreseeable reality.

The growing reserves of talented and trained engineers, technicians and earth scientists are essential to the earthquake forecast program, Dr. Donald F. Hornig, director of the President's Office of Science and Technology, said.

Dr. Press noted that engineers would determine by careful research those regions where severe quake damage is likely to occur. Studies would be made on the topography of regions, properties of soils, mechanics of landslides and other geological phenomena.

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