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# Summaries of Soviet Civil Defense Research Reports

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**Federal Emergency Management Agency**
Office of Civil Defense

# SUMMARIES OF SOVIET CIVIL DEFENSE RESEARCH REPORTS

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# NOTE TO THE READER

The Federal Emergency Management Agency has conducted Soviet civil defense research for many years. Knowledge of what protection the Soviet Union provides for its leadership, population, and resources is of importance for comparative analysis of the strategic balance for U.S. decision-makers. Also, because the Soviet effort is so much more extensive and advanced than that of the United States, knowledge and adaptation of Soviet techniques may prove useful to the U.S. civil defense community as well as to citizens interested in self-help protective measures. It is for these reasons, as well as to respond to increased interest in Soviet civil defense, that the Federal Emergency Management Agency's Office of Civil Defense is providing these summaries of six research reports on Soviet civil defense topics.

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# INTRODUCTION

This publication is a compilation of six executive summaries of research reports prepared, between 1981 and 1985, by Dr. Leon Goure for the Federal Emergency Management Agency (FEMA). Various aspects of the Soviet Union's Civil Defense Program are explored in the summaries. Topics of these summaries range from the protection of industry in nuclear war to the Soviet Agriculture Preparedness Program.

Organized under the Ministry of Defense, the Soviet Union has a large and comprehensive civil defense program. This program encompasses a wide range of activities which include: a massive civil defense training and indoctrination effort; a single-purpose blast shelter program; a dual-purpose blast shelter program (e.g., basements of residences); an industrial preparedness and protection program; a continuity of government program; and a general population evacuation program.

Intelligence reports on Soviet civil defense clearly show that the Soviet Union considers civil defense an integral component of its overall military strategy. By developing an active and extensive civil defense program, in conjunction with other defensive and offensive strategic forces, the Soviets seek to ensure the survival of the USSR should war occur. In addition to ensuring the survival of their nation, however, the Soviets also aspire to be in a stronger postwar position than their adversaries. Civil defense is intended to contribute to the maintenance of a functioning logistical base for operations by regular armed forces in winning a war, to help limit human and material losses, and to enable the country to speed recovery after a nuclear exchange.

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# SOVIET CIVIL DEFENSE CONCEPTS, PROGRAMS AND MEASURES FOR THE PROTECTION OF INDUSTRY IN NUCLEAR WAR CONDITIONS

## SUMMARY

This study focuses on Soviet civil defense plans, concepts, priorities and measures for limiting damage to and protecting industry from direct and collateral nuclear weapon effects. It is based on open Soviet sources and, therefore, does not attempt to ascertain the extent of actual Soviet implementation of this program. However, the Soviet approaches to this problem should be instructive for U.S. civil defense.

The Soviet leadership, both civilian and military, constantly emphasizes the critical importance of the economy, and especially of industry, as the foundation of national and, specifically, military power. In the Soviet view, the state's war-fighting capability is based not only on the prewar level of its "military economy," but on its "military-economic potential," i.e., the total capability of a mobilized war economy to support the country's war effort and attain "military-technical superiority" over the enemy in the course of the conflict.

The Soviets believe that the "military-economic potential" will have a critical influence on the course and outcome of a war, especially a protracted one, which the Soviets think is possible even under nuclear war conditions. It will also determine the Soviet Union's relative power position at war termination and on its recovery. Consequently, they attribute great importance to the protection of the economy in wartime, especially those elements which support the war effort, and believe that superior viability of the latter can be decisive in attaining "victory." Conversely, they assert that the destruction and paralysis of the economy can lead to defeat and threaten the survival of the state and society.

The Soviets entertain no illusions about the destructiveness of nuclear weapons. They assume, furthermore, that a war between the two opposing camps, i.e., the Soviet bloc and the West, will be waged with "decisive" war aims leading to the total defeat of one or the other. While the Soviet war survival strategy comprises offensive counterforce strikes, said to be preemptive, massive active defense and comprehensive civil defense, the

Soviets do not discount the possibility of an enemy surprise attack. Although they hope to be able to detect such a threat in time to mobilize the Soviet economy and to launch a preemptive strike, they believe that vital elements of the economy must be prepared in peacetime to survive such a "worst case" scenario.

The Soviets recognize that in a modern war the economies of the belligerents become one of the primary targets for nuclear strikes. The strategic threat to the Soviet economy may be reinforced by U.S. declaratory deterrence policy, which in the past has warned of the "assured destruction" of a high percentage of Soviet industry. The Soviets expect, however, that U.S. targeting doctrine would be more akin to that of the USSR, with priority given to counterforce, command and control and those economic targets which constitute the sources of the opponent's military struggle, i.e., those which directly and immediately determine his war-waging capabilities. The Soviets appear to see the current U.S. countervailing strategy as evidence of U.S. adoption of such a targeting doctrine.

The Soviets assign priority to the protection of those elements of the USSR's "military-economic potential" which they judge to be most critical for sustaining a war effort. These elements include: economic command and control at all levels, electric power, all defense-related industries, oil and gas industry, chemical industry, machine-building and metallurgical industries, electronics industry, and transportation.

The Soviet approach to the protection of industry and vital installations calls for an assessment of the vulnerabilities of each enterprise: structures, machinery and equipment, important production processes, power, fuel, water, steam, etc., supply systems, work force and so on, to prompt effects of nuclear detonations and secondary damage. Soviet civil defense manuals provide tables for different levels of damage (total, severe, moderate and light) for a wide variety of structures, equipment and support systems in terms of blast overpressures. They also provide methods for assessing the resistance or susceptibility to fire of various types of structures and the probability of propagation of fires. On this basis each enterprise determines its greatest vulnerabilities to light and medium damage and should take steps to remedy them.

Civil defense measures to protect industry and assure the "stability" of its operation in wartime are the second most important mission of USSR Civil Defense after protection of the leadership element. The Soviets approach

this problem in a "differentiated" manner, on the basis of the importance of the enterprise and its contribution to the war effort, the likelihood that it is targeted by the enemy and its location. Civil defense measures include long-range, time-consuming methods carried out for the protection of industry in peacetime, and emergency measures carried out at the time of a threat of an enemy attack. The long-range "technical-engineering" measures include:

- Protection of economic control and management personnel and communication systems;

- Construction of some complete hardened production units underground;

- Partial hardening of elements of select enterprises and installations underground;

- Raising the resistance of enterprises to direct and secondary damage;

- Geographic dispersal of enterprises and important installations, mainly by building new plants in small or medium towns and new locations in the eastern part of the country, construction of subsidiary facilities outside large cities for older plants and so on;

- Duplication of key enterprises and preparation of the economy for rapid war mobilization and conversion to defense production, which also results in redundancy in essential production capacities and their geographic dispersal;

- Protection of the power system and creation of stand-by power sources at critical locations and essential enterprises;

- Preparations for dispersal of essential production lines of select enterprises to stand-by hardened sites outside the cities;

- Preparation of large dispersed and protected stockpiles and reserves not only of military equipment and supplies, but also of food, fuel, spare parts, machinery, strategic raw materials, medical supplies, repair equipment, etc., to sustain the armed forces, the industry and the population during the most intensive phase of a nuclear exchange and to expedite the repair of damage and the reconstitution

of essential industrial production and transportation;

- Protection of the essential work force at operating enterprises and in exurban dispersed locations; and

- Maintenance of secrecy about and concealment of the implementation of civil defense measures for industry, economic mobilization plans and preparations, stockpiles, and all aspects of efforts to improve the survivability of the Soviet economy.

While emergency measures for the protection of industry would be carried out when the leadership decided that a "threat of war" exists, they also must be planned and prepared for in peacetime. The emergency measures may include any or all of these possible actions:

- Placing the enterprise, its operations and work force on a "war regime" system, which includes shifting to war production, establishing a two twelve-hour-work-shift system, preparations to protect the work force, valuable equipment and supplies, implementation of fire prevention measures, increased readiness of civil defense forces, blackout measures, dispersal of transportation equipment, etc.;

- Emergency hardening of selected vulnerable spaces at the enterprises by means of hasty reinforcement of walls and roofs, banking earth against exterior walls, strengthening roof supports in underground spaces, etc.;

- Emergency fire prevention measures, including removal of highly flammable structures, stocks of fuel and chemicals, painting exterior wood surfaces with fire-resistant chemicals, assuring water supply for fire fighting;

- Protection of valuable machinery and equipment by means of moving them to more protected locations at the enterprises, or shielding them by means of sand bags, or protective covers or shells built of sand bags on wooden or metal frames or consisting of precast reinforced concrete units of various shapes, which may allow continuous access to the machines or equipment; and

- Readiness for rapid shut-down of machinery, equipment and production processes to reduce damage and fire hazards.

According to a model plan published in a recent Soviet civil defense manual, the conversion of enterprises from a peacetime to a "threat of war" regime of operations requires some 12 to 24 hours, and 48 hours to convert to wartime production and complete fire prevention measures.

While Soviet expectations concerning the effectiveness of civil defense measures to limit damage to industry cannot be precisely ascertained, and in any event are probably war-scenario dependent, the leadership obviously continues to consider them worthwhile. The Soviets may also have expected that improvements in their counterforce strike capability would significantly help mitigate damage to the Soviet economy, and also that the protective measures would prove effective against air-burst, low-yield warheads. In the Soviet view, the U.S. adoption of the limited strike strategy indicated in PD-59 may also enhance prospects for the survivability of Soviet industry.

There is little discussion in open source Soviet literature of any specific plans or strategies for post-attack recovery of the Soviet Union. There is, however, great emphasis in Soviet civil defense plans and preparations on damage repair and rapid restoration of damaged enterprises. There are also indications that the Soviets expect to make use for recovery of out-of-country resources, i.e., surviving resources in Eastern Europe, captured resources in Western Europe, and resources of countries which can be coerced to provide the Soviet Union with economic assistance.

It is evident that the Soviets plan for a complex of measures to protect industry, with priority given to those elements which are believed essential to support a war effort and allow the Soviet Union to wage a protracted war as well as assure its superiority at war termination. The protection of the "military-economic potential" is considered to be an important part of Soviet war-fighting capabilities and strategy, and all indications are that the Soviets will continue to persist in this program.

# SOVIET POST-STRIKE CIVIL DEFENSE RESCUE, DAMAGE-LIMITING, REPAIR AND RESTORATION OPERATIONS

## SUMMARY

Post-strike rescue, damage-limitation, repair and restoration in areas of nuclear damage are one of the primary missions of Soviet civil defense. In Soviet perceptions, such post-strike operations can make an important—and possibly critical—contribution to the Soviet Union's warfighting capabilities, especially in a protracted war, as well as enhance prospects for a more rapid postwar recovery. Indeed, the requirement for post-strike civil defense operations follows logically from Soviet views on the wartime role of the economy in support of Soviet armed forces and their attainment of superiority. Therefore, the Soviets believe in the wartime necessity of maintaining essential enterprises, installations and services in continuous operation (consequently keeping workshifts of essential workers in potentially high risk areas) and of restoring essential production and services following enemy strikes.

These Soviet views largely determine the priorities of post-strike operations. The operations will concentrate on the rescue of essential workers; emergency repair and restoration in support of rescue activities; damage-limitation, repair and restoration on utility lines and at lightly to moderately damaged essential installations, and on the transportation system. In the area of nuclear damage, rescue of non-essential elements of the population will be of secondary priority. Little or no effort will be made to limit damage to residential structures or non-essential installations or to restore severely damaged or totally destroyed essential installations unless absolutely necessary.

The Soviets are well aware that in a nuclear environment, post-strike operations will be difficult and complex and require extensive manpower and equipment. Therefore, from an organizational viewpoint, the great majority of the more than 20 million Soviet civil defense personnel are assigned a role in these operations. Included are all public service, medical, utility, construction, engineering, transportation, technical, trade, catering and repair organizations, as well as a significant portion of the industrial and agricultural workforce serving in various civil defense

formations. Furthermore, at important locations or installations, these forces will be assisted by military civil defense troops and other types of military units. The civil defense authorities can also draft other elements of the population for participation in post-strike operations, and, if necessary, rural civil defense formations will reinforce urban-industrial formations operating in disaster areas.

Along functional lines, the forces are divided into general purpose formations, primarily assigned to rescue missions, and specialized formations organized by specialized services. In terms of their subordination, the formations are either territorial under the control of territorial civil defense chiefs and staffs (i.e., republic, oblast, city, city rayon, etc.), or installation formations under the control of installation civil defense chiefs and staffs—the latter being subordinated to the territorial chiefs. For operational purposes, installation formations may be reinforced by territorial formations. Also, in accordance with decisions of higher level chiefs, installation formations may be ordered to conduct operations at installations other than their own. Wartime command and control structure will follow the territorial-installation line of command, and its authority will supersede peacetime administrative and jurisdictional lines of authority and responsibility.

The Soviets realize that the feasibility of post-strike operations and their effectiveness is very much scenario-dependent. In particular, it is recognized that in worst-case situations (such as a massive enemy surprise attack, large scale counter-city and counter-value strikes or high initial radiation levels in the disaster areas and nearby exurban zones) post-strike operations will be severely hampered and their effectiveness markedly reduced. Favorable scenarios for post-strike operations require the completion of urban evacuation, full deployment of civil defense forces in exurban areas, and relatively limited and selective strikes on urban-industrial targets primarily with lower-yield warheads detonated in an airburst mode. The Soviets appear to believe that the occurrence of relatively favorable scenarios is sufficiently realistic and likely to justify the significant investment in the capability for post-attack operations.

The actual initiation of post-strike operations will be conducted on the basis of situation assessments provided by air and ground reconnaissance (including use of armored vehicles) and will largely depend on radiation levels. Although the Soviets see great urgency in the speedy rescue of occupants in damaged shelters or in shelters with blocked or damaged ventilation systems and in early damage-limiting actions (including con-

tainment of the spread of fires to surviving essential installations), these may be precluded or delayed by high radiation levels. According to Soviet publications, the permissible short-time cumulative radiation dose for civil defense personnel is 50r, although it is possible that some personnel may be ordered to risk doses of up to 100r.

Immediate post-strike operations include: 1) clearing and securing access routes to the areas of destruction and work sites; 2) firefighting at the sites and protecting surviving essential installations; 3) digging out buried shelters; 4) giving first aid to casualties and evacuating them to medical facilities; 5) the prevention of flooding, gas leaks, and secondary explosions; 6) shutting down power lines; 7) making emergency repairs to water and power lines; and 8) decontaminating areas, structures, personnel and equipment. Repair and restoration operations will begin upon completion of the rescue of survivors, primarily in zones of light to moderate damage. These operations are intended to repair utility lines to undamaged essential enterprises and put back into at least partial operation lightly to moderately damaged essential enterprises, installations and transportation. Surviving or repairable machinery and equipment, as well as parts, semi-finished goods and raw materials from severely damaged installations, will be salvaged and possibly used to set up new production lines in different locations. The repair and restoration process will be facilitated by stocks of machinery, spare parts, equipment, supplies, raw materials and fuel held in storage in exurban areas. There is reason to believe that under relatively favorable circumstances, the Soviets in fact could rapidly restore operations at lightly to moderately damaged installations, as well as significantly reduce losses among essential workers.

The seriousness of the Soviet commitment to post-strike operations is reflected not only by the creation of a very large trained and equipped civil defense force and the development of detailed plans for this mission, but

# THE SOVIET CRISIS RELOCATION PROGRAM

## SUMMARY

Crisis relocation—i.e., the pre-attack evacuation of the inhabitants of high risk cities and of workers of potentially targeted economic installations—is an important, long-standing and integral element of Soviet civil defense plans and programs. Soviet civil defense leaders have and continue to believe that under appropriate conditions and with adequate organization, preparation and control, crisis relocation can be a highly effective method of protecting the mass of the urban population and essential workers from enemy nuclear strikes. Soviet crisis relocation concepts and plans, therefore, are well developed and quite comprehensive, and Soviet civil defense appears to be generally ready and able to implement the evacuation rapidly and with short warning. These concepts and plans reflect Soviet views on possible war initiation and duration, likely enemy targeting strategy, and economic-logistic requirements for a sustained war effort and recovery and post-strike civil defense rescue, damage-limiting and repair operations. They naturally also reflect the Soviet political-administrative, economic, population control, and value systems as well as the existing technical capabilities for implementing crisis relocation.

While prior to the late 1960s, crisis relocation was considered to be the "main" method of protecting the Soviet urban population, growing Soviet concern over the possibility of war initiation with little or insufficient strategic warning has resulted in official priority being given to the development of capabilities for sheltering the population in-place. However, while sheltering in-place is seen as an insurance against a worst-case scenario, crisis relocation continues to be regarded not only as a desirable option in other war initiation scenarios, but preferable and even necessary regardless of existing shelters in the high risk areas. This stems from the Soviet view that the relocation of leadership and elite elements, essential workers and urban civil defense forces is critical for ensuring effective and continuous political, administrative and economic command and control; the ongoing operations of important industries, utilities and services in urban areas; and the preservation of large civil defense capabilities for conducting post-strike rescue, damage-limiting and repair activities in areas of nuclear damage. In addition, at present and at least in the near term, existing shelter capacities in urban areas are insufficient to protect all

of their inhabitants. Soviet civil defense leaders therefore do not question the utility and practicality of crisis relocation under all but the most unfavorable circumstances. Their primary concern is with finding ways and means of accelerating the rate of relocation so as to accomplish it in a "maximally compressed" time.

Crisis relocation will be ordered by the Soviet government when it decides that a threat of a possible attack on the Soviet Union exists. The ordered relocation can be selective, i.e., applying only to certain elements of the urban population, or it can be general. Precisely what indicators would cause this decision to be taken are not known. Crisis relocation will apply to those cities and economic installations which are believed to be likely targets of enemy strikes. This appears to include the largest cities of the USSR. The relocation must be carefully planned, organized and prepared at all levels already in peacetime with the active involvement of all administrative-territorial, economic, transportation, public service and civil defense organizations. The Soviet approach to crisis relocation is largely shaped by a value system which assigns priority to the protection of organizations and persons needed for system survival and preservation of control, sustained economic-logistic support of the armed forces and post-strike reconstitution and recovery. Consequently, there is a priority requirement to "disperse" essential workers of urban enterprises, utilities and services which will remain in continuous operation in such a manner as to allow workshifts to commute to work. Urban civil defense formations will also be "dispersed" so that they can rapidly reach the cities. The non-essential elements of the population will be "evacuated" to hosting areas which do not meet the "dispersal" requirements. As a result, the relocation must be tightly controlled and carried out through work places for employed persons and residential administrations for non-working people. The value system will also have a strong bearing on the allocation and priority use of transportation.

Primary responsibility for crisis relocation planning rests with the civil defense chiefs, their deputies for evacuation and staffs, and urban evacuation commissions and rural evacuation reception commissions at all levels. Identification and assignment of hosting areas and localities and elaboration of relocation plans are carried out downward from higher to lower organs and staffs while the coordination of plans is an upward process in the hierarchical civil defense structure. Planning is greatly facilitated by the system of centralized political and state authority, the state ownership of and control over the economy, the existence of a national, centrally directed civil defense organization, the dependence of

the population on non-private means of transportation and so on. The authorities have the ability, therefore, to prohibit and prevent all independent evacuation by the urban population, to determine who will be "dispersed" and who will be "evacuated", to establish schedules for the departure of all elements of the population, to direct who will be authorized to use transportation and who will leave the cities on foot, to assign travel routes and destinations to vehicles and marching groups, and to require residents in hosting areas to house all evacuees allotted to them in their homes. The hosting areas—knowing in advance which urban organization is assigned to them, how many evacuees will arrive, and approximately when they will arrive and by what means—can prepare plans for their reception, housing, anti-radiation protection, supplying and servicing. The urban organizations in turn, being informed about the infrastructure in their assigned hosting areas, can assist in improving it.

The relocation of the population is carried out through Evacuation Assembly Points (SEPs) established at places of work and in residential areas. Essentially every urban resident (or family) will be assigned a specific SEP and given a time for reporting to it. Each SEP will register, organize for departure and supervise the boarding of transport or the formation of marching columns of up to 2,000 to 3,000 persons. Prior to 1975, control and registration was based on a system of evacuation passes issued to the population. At present, places of work and housing authorities maintain lists of employees (and members of their families) and residents who are assigned to each SEP. The latter will process the evacuees and organize their departure on the basis of these lists, which will also be used by rural evacuation reception points to register the arriving evacuees and determine that they are authorized to use a given hosting area. Problems may arise, however, because of the large number of SEPs, the population's confusion about which to go to and when to report, possible failures to keep evacuation lists fully current, the need to maintain urban transportation systems in operation during this phase of the relocation and the heavy crossflow of the residents reporting to the SEPs or to departure points of transportation and foot columns.

To move the population, use will be made of all available means of transportation, i.e., railroads, motor vehicles—including trucks, and river and sea-going vessels. There are, however, limitations on relocation transportation capabilities due to shortages of transport, and of all-weather roads, climatic restrictions on the use of rivers and roads, and priorities assigned to military rail and road movements. In order to accelerate the rate of evacuation, the concept of relocation by a "combined method" was

introduced in the early 1970s which provides for a portion of the population—primarily younger, physically fit elements—to leave the cities in organized groups on foot. All movement will be along designated routes and preplanned schedules. Motor vehicles will travel only in convoys to designated destinations, usually located at such distances as to permit one or more round trips in a 12-hour period. Foot columns will usually move only one day's march from the cities to assigned Intermediate Evacuation Points from which the evacuees will be subsequently transported to their final destinations. Vehicle traffic will be controlled by dispatcher and traffic control posts and assisted by fixed and mobile fueling and repair units. Priority in the use of transport appears to be given to elite elements, essential workers, personnel of significant organizations which will relocate their operations to the exurban areas, civil defense formations and the elderly, invalids, pregnant women and women with young children. Primarily subject to relocation on foot will be students of higher and middle-level boarding institutions and physically fit workers and employees (and their family members) of enterprises, institutions and organizations which will cease operations.

Soviet planned rates of relocation, the size of the population to be relocated and the number of persons to be "dispersed" vs. those who will be "evacuated" are not known. It is not unlikely, however, that the Soviets plan to relocate some 100 to 120 million urban residents. The number of essential workers subject to being "dispersed" may be as large as 20 to 25 million. Also to be moved to the dispersal areas will be civil defense formations and where conditions permit, the families of the workers and civil defense personnel. At least in theory, therefore, some 50 to 70 million persons may be considered for relocation to "dispersal" hosting areas. Soviet plans, however, anticipate that where conditions in the exurban areas do not permit this, the families will be sent to other hosting localities. Despite the limitations of the Soviet transportation system, it appears that the majority of the urban population could be evacuated in two to three days, although the rates will vary from city to city, and certainly all the "valuable" elements of the population could be relocated in such a period of time.

As far as possible, each city's hosting areas will be within the boundaries of the oblast (province) or republic (in the case of small ones) where the city is located. "Dispersal" hosting areas must be located on or in close proximity of major transportation routes. In well-developed exurban areas, hosting ratios will be on the average of two evacuees per local resident. In other areas, hosting ratios could be greater (the minimum

floorspace per resident and evacuee being 2 $m^2$ or 21.5 $ft.^2$), or where there are no developed hosting areas, the evacuees would live in hastily built huts, dugouts, etc. The hosting areas' civil defense staffs and evacuation reception commissions will prepare to receive, house, protect, supply and support the evacuees. Included in these measures would be the building up of stocks of food, goods of basic necessity, medical supplies and building materials for the construction of anti-radiation shelters, the improvement of water supplies, food processing, preparation and catering capacities, the expansion of medical facilities and services. In the event of a crisis relocation, these hosting areas' capacities will also be expanded by relocated urban public feeding, trade, medical and various service organizations and the deployment where needed of mobile field kitchens. While preparation of basements and other existing underground structures in rural areas for use as anti-radiation shelters is carried out to varying degrees as a part of the peacetime civil defense program, it appears that generally the construction of supplemental simple anti-radiation shelters, which may be needed to protect all evacuees in the hosting areas, will not be initiated until a time of crisis and/or the start of crisis relocation. The time required for such construction must be added to the total duration of the crisis relocation before the evacuees can be considered to be effectively protected.

The precise role of Soviet armed forces, especially of the military civil defense troops, in assisting crisis relocation is not known. It may depend on whether the relocation coincides with the mobilization and deployment of the armed forces or takes place following their completion and also on the military leadership's perception of the immediacy of a threat of enemy nuclear strikes. There are indications, however, that under favorable circumstances the military may assist crisis relocation in various ways, such as: maintenance of order and traffic control; road maintenance and construction; construction of shelters, water reservoirs, and protected facilities for stocks of food, fuel, medical supplies and other essential goods in hosting areas; assistance in communications; providing temporary power to hospitals, bakeries, communication centers, etc.; giving medical aid and hospital care to civilian casualties; and flying food and other emergency supplies to localities temporarily isolated as a result of enemy strikes.

To ensure the population's orderly behavior and disciplined execution of orders in the course of crisis relocation, instruction in relocation procedures is included in the compulsory civil defense training program for the population. However, only one hour of instruction on this topic is included

in the yearly course, and its content is relatively simple, given that there is little requirement for the population to show initiative or take any independent actions in the relocation process. The instruction program is supplemented by various types of exercises. Most of these are command-staff exercises held by civil defense to examine and test plans and assumptions, but do not usually involve the population. Integrated exercises which are periodically held at smaller towns, urban and rural rayons and at industrial enterprises, educational institutions, collective and state farms, etc., do include an evacuation phase, which may involve the movement of off-duty workers and members of their families to exurban areas or a one-day march from the cities by students and young workers. There is no evidence, however, of large-scale exercises having been held which introduces some uncertainty into the question of the realism and effectiveness of Soviet relocation plans and schedules. There again, essential workers are more likely to be better trained and exercised than other elements of the population.

While careful account must be taken of the many differences between the Soviet Union and the United States, the Soviet crisis relocation program may suggest some useful concepts and methods for any similar program in the U.S. Most noteworthy are the Soviet requirements for the relocation of significant elements of the urban population regardless of the availability of blast shelters in the cities, the preparation of hosting areas, the system of allocation of hosting areas and distribution of evacuees among them, the "dispersal" concept for essential workers, the organized use of public transportation, the control and support system for vehicle traffic, the concept of evacuation passes, and the content of public instruction. Finally, the U.S. cannot ignore the existence of a well-developed, planned and organized Soviet capability to carry out a rapid relocation of a large part of its urban population and to remain in this posture for protracted periods of time while maintaining essential economic activities.

# THE SOVIET CIVIL DEFENSE MEDICAL PREPAREDNESS PROGRAM

## SUMMARY

The Soviet Civil Defense Medical Preparedness Program is an integral and very important part of USSR Civil Defense and its measures to mitigate losses among the population in peacetime disasters or in a nuclear war. The program is intended to provide medical assistance and treatment to mass casualties. The Soviets have no illusions about the magnitude of the medical problem which may confront the Civil Defense Medical Service (CDMS) in the event of a nuclear attack, but appear to be reasonably optimistic about prospects for accomplishing this. Soviet publications claim that CDMS preparations and plans are based on the assumption of a worst-case attack scenario. They admit, however, that it would be significantly more difficult for the CDMS to provide timely and effective medical assistance to the injured in the event of enemy strikes on large cities with little warning than if the population, medical institutions, and personnel are evacuated from high-risk areas prior to an attack and with only a duty-shift of essential workers in the targeted cities.

The Soviet Civil Defense Medical Preparedness Program is based on the principle of compulsory inclusion of all medical-public health institutions and personnel in the CDMS, regardless of their peacetime affiliations. It includes the organization of these institutions and personnel into various CDMS formations and facilities, and the obligatory participation of all medical personnel—including medical students—in the general civil defense instruction program for the population and in special civil defense medical instruction courses designed for the various professional levels of the medical personnel. Supplementing the medical-public health personnel in the CDMS is a mass of trained first aid squads (*sanitarnyye druzhiny* or SDs) and detachments established at economic enterprises, administrative organizations, educational institutions, collective and state farms, and so on. These are composed primarily of younger women and are intended to provide first aid to the injured in the areas of destruction and to assist the medical personnel in the mobile CDMS detachments and in hospitals. Furthermore, the entire population receives instruction in simple first aid techniques as a part of the compulsory civil defense training program for it.

In peacetime the CDMS is engaged in the instruction, training, and exercising of its formations and personnel; the planning of and preparation for the rapid evacuation of medical-public health institutions and personnel from high-risk areas; and in stockpiling medical supplies and equipment. The CDMS also stands ready to implement emergency medical measures to assist the population in the event of peacetime disasters. In the event of a threat of enemy attack, the CDMS will evacuate medical-public health institutions from high-risk areas to pre-designated host areas and dedicated facilities in the exurban areas, expand the capacities of hospitals in the latter areas, and provide medical assistance to the population during its evacuation.

In order to deal with mass casualties, the CDMS had adopted a two-stage triage-treatment-evacuation system for the injured and sick. The first stage consists of first aid and emergency medical assistance in the areas of destruction. This will be provided by the SDs working with civil defense rescue forces and by mobile First Medical Assistance Detachments (OPMs) organized on a compulsory basis already in peacetime by all sizeable hospitals and clinics. Each OPM is said to have the capability to receive, sort, provide emergency and lifesaving medical treatment, and evacuate to exurban hospitals or briefly hospitalize at the OPM up to one thousand injured persons per day. The SDs and OPMs may be reinforced by military medical companies.

The second stage of the casualty evacuation system consists of the CDMS hospital system in exurban areas. It includes Hospital Bases established in the *oblasts* and subordinate Collector Hospitals based on *rayons* (counties). The latter includes Triage-Evacuation Hospitals (SEGs) to treat arriving cases requiring immediate attention and specialized hospitals to treat various types of injuries or communicable diseases. Transportation from OPMs to Collector Hospitals will be by motor vehicles and hospital trains, as well as river and ocean-going ships and also by air. In order to make the most efficient use of specialized medical personnel, i.e., specialist physicians, they are organized into mobile Brigades of Specialized Medical Assistance, which will work in the specialized hospitals or reinforce, where needed, the physicians in the hospital system. The CDMS hospital organization appears to facilitate an efficient system of allocation and distribution of medical assets and supplies. The danger of epidemics among the surviving population and the outbreak of dangerous communicable diseases will be dealt with by special hygiene, sanitation, and medical anti-epidemic detachments and, where needed, by mobile and fixed hospitals for communicable diseases.

In terms of numbers of physicians, middle-level medical personnel, and hospital beds, the Soviet medical-public health system is significantly larger than that of the United States (in 1981 the USSR had 1,033,900 physicians, 2,880,000 middle-level medical personnel, 23,100 hospitals with 3,384,000 beds, and 36,500 polyclinics). There is no official information on the size of the SD force and the number of OPMs—it appears possible that the former has some 1.5 to 3 million members, and that there may be some 30,000 OPMs. In principle, therefore, the CDMS has the number of personnel and organizations required to deal with mass casualties, even in the numbers which may be generated by a worst-case attack scenario. However, in such a scenario, the CDMS may suffer significant losses of facilities and personnel, while other elements in the targeted area may be pinned down in shelters, thus requiring a redeployment to the disaster areas of SDs and OPMs from more distant rural areas and surviving towns. Furthermore, in the worst-case scenario, there may be insufficient time prior to the attack to greatly expand the capacities of hospitals in the exurban areas. However, in the event of a pre-attack evacuation of the population, medical institutions, and personnel from high-risk areas, the number of casualties would be markedly fewer and the CDMS forces would be largely intact. While there is a maldistribution in the USSR of physicians, middle-level medical personnel, and hospital beds among the republics and oblasts and between cities and rural areas, the concentration of such personnel in the larger cities could also ensure that following their evacuation these cities would have relatively large numbers of CDMS personnel and formations nearby ready to assist the injured in the event of an attack. Thus, in the event of a pre-attack evacuation of high-risk areas, the CDMS appears likely to have the capabilities to effectively deal with the large number of injured resulting from enemy nuclear strikes on those areas.

The effectiveness of the CDMS in dealing with mass casualties will be constrained, however, by the relatively low quality of Soviet medicine, shortages of medical specialists, the prevalence of obsolete medical equipment, and possibly also shortages of medical supplies and equipment, which occur even in peacetime. Soviet open sources make no mention of the size and content of the stocks of medical supplies and equipment being created and stored in the exurban areas beyond citing a requirement for them. It is possible that peacetime shortages of such supplies in the civilian sector may reflect a deliberate Soviet program for creating such stocks reserved solely for emergency/wartime use, as is the case with food and various other consumer goods. It is also possible that being more used to working in relatively primitive conditions, Soviet

physicians may be better prepared than Western physicians for carrying on their activities under post-strike conditions.

Of course, a major uncertainty in the operations of the CDMS will be the character of the post-attack environment in which the SDs, OPMs, and hospitals may have to carry out their various missions. Soviet publications suggest that rescue and first medical assistance operations will initially focus on survivors in the zones of light and moderate damage and only progressively extend such activities to the zones of severe damage and total destruction where it is expected only personnel in undamaged blast shelters will survive. However, timely rescue and medical assistance efforts may be disrupted or prevented by radioactive fallout and damage to roads, rail lines and bridges, as well as by various secondary effects of nuclear detonations.

The CDMS forces may make up some 20-25 percent of the total Soviet civil defense forces. While the peacetime cost of full-time personnel serving in the CDMS appears to be low, the cost of equipping the force—and especially of building up and maintaining the necessary stocks of medical supplies and equipment for a wartime emergency—may be quite high. If, as is assumed in this study, the Soviet total yearly investment in civil defense expressed in the dollar cost of an equivalent U.S. effort may be on the order of $6 billion, the cost of the Soviet Medical Preparedness Program could well be on the order of 30 percent or even more of that investment.

Even though due allowance must be made for the differences in the U.S. and Soviet medical-public health systems, the Soviet Civil Defense Medical Preparedness Program appears to offer a number of potentially useful lessons for a similar U.S. program. The most obvious ones are that the credibility of a civil defense medical preparedness program depends in a large measure on the credibility of the civil defense program as a whole and vice versa, and that to provide effective medical assistance to mass casualties in the event of a nuclear war will require the mobilization, organization, and effective utilization of all available medical resources and personnel and the creation in peacetime of sufficient stocks in non-risk areas of medical supplies and equipment to support such an effort and also to sustain the surviving population after an attack for a protracted period of time. As in the Soviet Union, the pre-attack evacuation of medical institutions and personnel from high-risk areas in the United States to designated host areas and dedicated facilities in the exurban zone and plans and preparations for the rapid expansion of medical hospital facilities in

this latter zone can play a crucial role in ensuring the existence of effective medical capabilities for dealing with mass casualties. The Soviet need to evacuate the population, medical institutions, and personnel from high-risk areas prior to attack could be viewed as lending essential realism to similar U.S. civil defense plans.

It is evident that despite various shortcomings discussed in Soviet publications, the Soviets take the Civil Defense Medical Preparedness Program very seriously and invest considerable resources in it. Indeed, it could be said that this program is a measure of the Soviet commitment to the development of an effective civil defense capability.

# SOVIET CIVIL DEFENSE PUBLIC INSTRUCTION AND TRAINING PROGRAMS

## SUMMARY

The Soviet Union has a long-standing civil defense public instruction program which the leadership believes to be essential for an effective civil defense capability and readiness to deal with a nuclear war threat. The primary objective of the instruction program is to ensure that in an emergency the population will act in an organized and purposeful manner in response to civil defense signals and orders, will know how to make effective use of civil defense facilities and equipment, and also will be able to actively contribute to the implementation of civil defense measures. A secondary objective is to instill in the population loyalty to the regime, patriotism, and support of Soviet foreign and defense policies, as well as discipline. Thus, in addition to training programs for the large civilian part-time and defense forces of some 16 to 20 million, the Soviet population has been subjected since 1955 to a succession of eight compulsory civil defense instruction courses of different lengths, all of which have taken a number of years to complete.

The pervasiveness of the instruction program is assured by the organization of compulsory instruction courses for three elements of the general population: school children and students; working adults—i.e., workers, employees, and collective farm workers; and non-working adults—i.e., retirees, self-employed persons, and housewives. Instruction in secondary and vocational schools, middle-level technical schools, and institutions of higher learning is a part of the curriculum. Instruction of working adults is carried out at places of work, and in the case of non-working adults, at places of residence.

At the present time, instruction in secondary schools is given in the 2nd grade (5-8 hours), 5th grade (15 hours), and 9th-10th grades (32 hours), and is supplemented by civil defense training while school children attend Pioneer Camps and participate in paramilitary games (Zarnitsa and Orlenok). Students in middle-level technical schools are given up to 32 hours of civil defense instruction, and those in institutions of higher learning 40 hours or more. Since 1973, the working population has been required to undergo a minimum of 20 hours of instruction annually in its free time,

while at the present time, the non-working adults are subject to at least 12 hours of instruction. In principle, therefore, in excess of 200 million Soviet citizens not serving in the civil defense forces are supposed to undergo annual instruction in civil defense.

The basic subjects covered by the instruction courses include: effects of nuclear, chemical, bacteriological, and conventional weapons; civil defense warning signals and how to act according to them; uses of gas masks and protective suits and how to adapt cloth masks and ordinary clothing for protective purposes; use of blast shelters and construction of fallout shelters; evacuation and dispersal; first aid and personal decontamination; actions in the event of natural disasters; post-attack (or natural disaster) rescue and damage-limiting operations; and for the rural population, methods of protection of livestock, stocks of food, grain, fodder, water sources, etc.

There are also additional subjects taught to various groups depending on the character of their studies in the case of students or responsibilities in the case of adults. For example, students in the 9th and 10th grades learn to use radiation measuring instruments and chemical detection kits and how to operate radiation and chemical observation-monitoring posts. Students in middle-level technical schools and institutions of higher learning receive additional instruction according to their fields of study, i.e., medical, engineering, construction, agronomy, transportation, etc., in order to prepare them for duties in the various civil defense services and their formations. Working and non-working adults are also taught blackout and fire prevention measures for their residences, protection of food, protective measures at the work place, behavior in contaminated areas, actions for the protection of children, etc.

Over the years, the instruction program has sought to emphasize practical training over theoretical instruction, although much of the instruction has remained of the latter types. The instruction program is supplemented by a large civil defense propaganda program which makes use of all elements of the mass media, as well as of public lectures, films, exhibits, and so on.

Although the Soviet authorities claim that the instruction program has been largely successful, they also acknowledge instances of shortcomings in its implementation and that it has not met all of its objectives. The causes of shortcomings are organizational, bureaucratic, and practical, as well as attitudinal. The implementation of the program has suffered from bureaucratic inertia, unwillingness of some managers and local officials to devote

the necessary attention and time to it, frequent instances of low quality instruction, and indifference of local authorities to the instruction of non-working adults. While the repetitiveness of the annual 20-hour instruction course given since 1973 may have been intended to ensure retention of information by the working adults, it has also tended to generate boredom and indifference to instruction among the trainees. Apparently a current attempt to remedy this was the introduction in 1983 of a three-year instruction course for the working population which is supposed to take advantage of the population's existing knowledge and give more emphasis to practical training. It also provides in each successive year of the course for further elaboration of the preceding year's instructions as well as additional study topics. The introduction of this three-year course has required the retraining of all civil defense instructors.

In the matter of public attitude toward civil defense, Soviet authorities acknowledge that in addition to boredom and indifference, some elements of the population are skeptical about the effectiveness of civil defense as a means of protection against nuclear weapons. Other reasons for public skepticism include the widespread popular expectation that a war may begin with an enemy surprise attack which would prevent the implementation of many civil defense measures such as evacuation and also the view that the Soviet system is highly inefficient and, therefore, would not be able to execute civil defense measures in an emergency in a rapid and effective manner. It should be kept in mind that the attitude of the Soviet population also is influenced by the requirement to give up free time to instruction and by the routine character of the instruction program which has been a long-standing feature in the life of Soviet citizens and lacks the stimulus of being associated with a crisis or the perception of an imminent threat.

Soviet authorities attempt to deal with these attitudes in various ways intended, as they claim, to instill in the population "confidence" and "faith" in the effectiveness of civil defense. This includes: explaining why protective measures can be effective in mitigating the effects of "weapons of mass destruction;" showing people civil defense facilities built for their protection, such as shelters, and involving them in exercises so as to lend greater credibility to the instruction program; appealing to the individuals' self-interest in being able to enhance prospects of survival for themselves and their loves ones (it is implied that a failure to possess civil defense knowledge may contribute to the death of loved ones and friends); appealing to the citizen's civic and patriotic duty to conscientiously carry out programs contributing to the Soviet Union's defense capability;

making clear that the citizenry may be conscripted not only to build fallout shelters but also to participate in post-strike rescue and damage-limiting operations; and requiring trainees to pass examinations. Even so, Soviet authorities acknowledge that despite the long-standing instruction program, some elements of the population still do not have a firm grasp of required civil defense knowledge and skills.

Given the magnitude of the scope of the instruction program, it requires a large body of instructors, all the more so as most instruction classes are on the order of 25 to 40 persons. Actually the number of full-time paid personnel involved in the instruction process only includes supervisory and planning personnel on full-time civil defense staffs, instructors of civil defense schools which exist at various levels, and military instructors in the educational system, whose duties also include the teaching of military subjects, and also 2nd grade and some 5th grade teachers who primarily teach other subjects. Altogether this may represent some 75,000 to 100,000 full-time persons who, however, for the most part have other duties as well.

The working and non-working population is instructed by part-time, unpaid instructors, largely made up of personnel with command or technical responsibilities in the civilian civil defense forces at places of work and in residential areas. The total number of such instructors is not known and depends on the number of classes taught by each instructor, which probably varies a great deal. In theory, if each instructor teaches ten classes (approx. 200 hours) each year, the number of instructors for the working population could be in the range of 270,000 to 440,000. At the very least the number is not less than 150,000. Again, instruction of non-working adults theoretically could require as many as 150,000 to 200,000 instructors, although a portion of them would also be instructors used in the training program for the working population. Thus, at a minimum, the instruction program uses not less than 250,000 part-time instructors, and their number may well be significantly greater—many of whom, however, are said to be not well trained and to be lacking teaching skills.

Despite its magnitude, the direct cost of the instruction program is relatively low because most of the personnel implementing it receive no pay, although instructors who attend classes at civil defense schools (one to two weeks) receive their salaries for that time. However, there are other costs associated with the program such as: administration; cost of instructional equipment, supplies, classroom furniture and training facilities; cost of exercises; cost of the use of the mass media and preparation

of propaganda materials; cost of books, manuals, pamphlets, posters, films, public lectures and exhibits, etc. There is no evidence that the instruction program is insufficiently funded, although there appear to be instances of inadequate support at local levels.

Overall, despite problems and shortcomings, it appears that the great majority of the Soviet population has been exposed repeatedly to instruction in civil defense. This suggests that despite any skepticism, a high percentage of the population probably has sufficient knowledge and skills to act in an emergency in accordance with civil defense signals and orders and to contribute to civil defense measures for its own protection.

# SOVIET CIVIL DEFENSE AGRICULTURAL PREPAREDNESS

## SUMMARY

USSR Civil Defense considers agricultural civil defense to be an integral part of its program and an essential—indeed, critical—element of its mission to mitigate human losses and economic damage and, thereby, enhance prospects for the Soviet Union's survival and recovery in a nuclear war. This is so not only because some 96.5 million people live in Soviet rural areas, a number which would be greatly increased in the event of the pre-attack evacuation of the urban population, but also because it is recognized that the Soviet Union's war survival and recovery will critically depend on the ability of agriculture to feed the surviving population.

Soviet agricultural civil defense appears to have a realistic view of the threats and problems which the near- and long-term effects of nuclear detonations—primarily local and global fallout—and also possible enemy use of chemical and bacteriological weapons will pose for agricultural resources (i.e., crops, livestock, stocks of food and fodder, water supply, etc.) and the post-attack reconstitution of agricultural production. It also recognizes that following an attack, agricultural production will be hampered not only by radioactive contamination of crops and soil, but also by disruptions and shortages of essential supplies (i.e., fuel, machinery parts, fertilizer, pesticides, etc.) and electric power.

Soviet agricultural civil defense concepts for the protection of the population in rural areas and agricultural resources are largely similar to those envisaged by Western civil defense programs and, if implemented, would be generally effective. In addition, however, they also address problems of post-attack damage limitation to livestock, crops, and food stocks and their decontamination, as well as the planning and organization of the resumption of agricultural production under various possible conditions of long-term radioactive contamination.

Soviet agricultural civil defense has important advantages in its ability to implement its concepts and measures. These advantages are the result of the socialized character of Soviet agriculture; its organization into relatively large production units, i.e., collective and state farms; the obligatory participation of all rural governmental-administrative, service, and economic agencies and institutions in the civil defense program; and

the compulsory civil defense instruction of the population. This makes it possible for Soviet agricultural civil defense to ensure the participation of significant elements of the rural population in large trained and equipped civil defense forces; to carry out preparatory as well as comprehensive emergency measures to protect the population and agricultural resources; to make effective use of machinery and equipment on the farms for civil defense purposes; and to coordinate plans and organize the operations for facilitating the post-attack reconstitution of agricultural production. Furthermore, the rural population knows what to do and how to behave in the event of a threat of or following an attack to protect itself and to help reduce losses of agricultural resources.

The implementation of the measures proposed by Soviet agricultural civil defense will, in all likelihood, be effective in mitigating losses of people and agricultural resources from the prompt effects and fallout of nuclear detonations. This in turn would facilitate the post-attack reconstitution of agricultural production. Soviet civil defense publications note, however, that the success of agricultural civil defense is fraught with many uncertainties:

- The implementation of essential measures to protect the population, livestock, stocks of food and fodder, and other essential resources takes time and, consequently, depends on the receipt of early strategic warning of a possible attack.

- The extent of damage to agricultural resources and problems posed by the post-attack environment are difficult to predict because they

For those interested in more detailed information on the subjects addressed in these summaries, copies of the full research reports are available. The publications described below can be obtained by completing and mailing in the order form provided at the end of this publication.

*The Soviet Civil Defense Medical Preparedness Program* (March 1984/ 122 Pages) (RR-18)
The Soviet civil defense medical preparedness program is an integral and very important part of USSR civil defense and its measures to mitigate losses among the population in peacetime disasters or in a nuclear war. This text describes, analyzes, and assesses, on the basis of open Soviet source materials, the Soviet civil defense medical preparedness program and its assumptions, plans, organization, and capabilities for providing medical assistance to mass casualties. In addition, the study attempts to identify potentially useful ideas which can be derived from the Soviet program for a similar U.S. program.

*Soviet Civil Defense Public Instruction and Training Programs* (August 1984/99 Pages) (RR-19)
In the Soviet Union, civil defense instruction is compulsory for the entire population and is carried out on the basis of various programs for students in the educational system, working adults and non-working adults. This report describes and analyzes, on the basis of open Soviet source materials, the scope, objectives, organization, plans, contents, conduct, capabilities, shortcomings and effectiveness of the Soviet civil defense public instruction and training programs.

*The Soviet Crisis Relocation Program* (May 1983/247 Pages) (RR-20)
Crisis relocation is an important, long-standing and integral element of Soviet civil defense plans and programs. This report describes and analyzes, on the basis of open Soviet source materials, Soviet civil defense concepts, plans, organization, priorities, training programs, and capabilities pertaining to crisis relocation of residents of high-risk urban areas and workers of significant economic installations.

*Soviet Civil Defense Agricultural Preparedness* (June 1985/139 Pages) (RR-21)
USSR civil defense considers agricultural civil defense to be an integral part of its program and an essential element of its mission to mitigate human losses and economic damage and, thereby, enhance prospects for the Soviet Union's survival and recovery in a nuclear war. The objective of this study is to describe and analyze, on the basis of Soviet open-source

materials, the Soviet Agricultural Civil Defense Program: its views on the threats to agricultural resources, plans and concepts, organization, proposed measures for dealing with the near- and long-term effects on nuclear detonations, capabilities, and uncertainties.

*Soviet Civil Defense Concepts, Programs and Measures for the Protection of Industry in Nuclear war Conditions* (June 1981/161 Pages) (RR-22)
The Soviet leadership, both civilian and military, constantly emphasizes the critical importance of the economy, and especially of industry, as the foundation of national and, specifically, military power. This study focuses on Soviet civil defense plans, concepts, priorities and measures for limiting damage to and protecting industry from direct and collateral nuclear weapons effects.

*Soviet Post-Strike Civil Defense Rescue, Damage-Limiting, Repair and Restoration Operations* (August 1982/177 Pages) (RR-23)
Soviet sources indicate that a great deal of importance is attributed to post-strike operations and that the overwhelming majority of civilian and military civil defense forces of over some 20 million are assigned to this mission. This report describes and analyzes, on the basis of open Soviet source materials, Soviet civil defense concepts, organization, priorities, operational plans and capabilities pertaining to post-strike rescue, damage-limiting, emergency repair and restoration operations in centers of nuclear destruction.

In addition, the following publications are also available from the Federal Emergency Management Agency.

*Soviet Civil Defense* (FEMA-52). This publication presents a comprehensive examination of the Soviet civil defense program. It provides judgments on the pace, scope, and effectiveness of the program.

*Shelter Management Handbook* (FEMA-59). This handbook provides step-by-step instructions for effective operation of a fallout shelter. The reader is also provided with emergency self-help information that will assist in coping with any type of shelter environment.

*Recovery From Nuclear Attack* (FEMA-160). This publication explores not only the effects and consequences of a nuclear attack, but also the conditions a person would face in its aftermath. Ways in which recovery from such an attack could be addressed is also explored in the publication.

*A Comparison of Soviet and U.S. Civil Defense Programs* (FEMA-161). This booklet highlights and contrasts various aspects of each nation's civil defense program. Future trends and historical differences between the two programs are examined in the publication.

*In Time of Emergency*—A Citizen's Handbook on Emergency Management (H-14). This publication provides information on what families can do to prepare for a wide range of natural disasters and other emergencies.

*Planning For Survival* (H-20). This booklet describes the effects of a nuclear detonation and protective actions that you can undertake.

*Radiological Emergency Management* (HS-3). This home study course provides reading material and test questions on a wide range of radiological emergencies, including nuclear attack and nuclear power plant accidents. The course provides information on the effects of radiation and steps that can be taken to reduce or limit these effects.

*Preparedness Planning for a Nuclear Crisis* (HS-4). This home study course contains reading material and test questions that cover the effects of nuclear weapons and what citizens can do to protect themselves from a nuclear detonation. It includes information on evacuation, sheltering, and family emergency planning.

*What You Should Know About Nuclear Preparedness* (L-138). This brochure answers many commonly asked questions about nuclear attack. Questions on warning, shelters, fallout, the Emergency Broadcast System, and evacuation are answered in the brochure.

*Emergency Preparedness Checklist* (L-154). In a checklist format, this pamphlet provides general information on emergency preparedness such as stockpiling food and evacuation planning.

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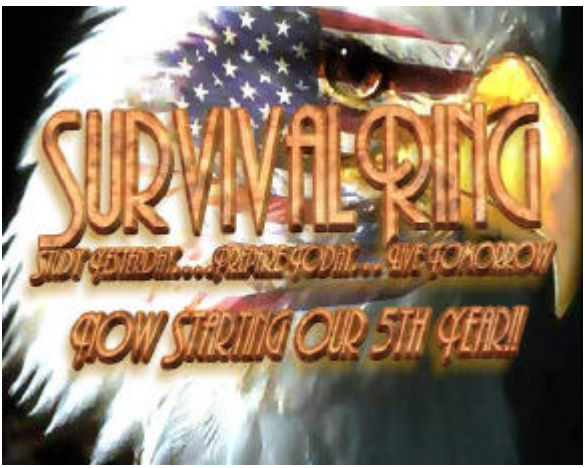

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