

## **REPORT CONCERNING DEVELOPED AND PLANNED DISASTER PREVENTIVE ACTIVITIES ASSESSMENT IN ROMANIA**

The natural conditions, geographical position and human activities make possible that almost all known calamity and disaster type to produce or demonstrate their destructive plot in Romania. Thus, many earthquakes, floods, ground slips, snow falls, prolonged droughts, road and railway accidents, chemical accidents and an important radioactivity contamination resulting from CHERNOBYL event have been produced this century in Romania. The existence of unexploded bombs from the First and Second World War had produced harms, life casualties and important damages beside all these calamities and disasters.

A system of CIVIL DEFENCE is organised in Romania as far as concerned the calamities and disaster identification, risk assessment and preventive activity management, who is charged in this field with important missions.

### **1. CIVIL DEFENCE LEGISLATIVE BACKGROUND, ORGANISATION AND MISSIONS**

The First World War experience had proved that an active protection - as much as strong it would be, couldn't completely protect the civilians. This aspect has been a research subject and so, in 1929 the Great General Staff of the Army has founded the first population protective paramilitary organisation, and through the Royal Order no.468 from 28 February 1933 the "The passive Protection against Air Attack Raids Functioning Regulations" was approved - a legitimate birth certificate of CIVIL DEFENCE of Romania.

The necessity of human and goods protection - which through the strength and speed of enemy penetration in our air space during the second world war become an easy target - had justified the first specific civil defence units setting up.

The study and adoption of new forms and proceedings whereby the CIVIL DEFENCE aims to be practically transpose, results from the 1933-1952 period CIVIL DEFENCE functioning studies and from war period demonstrated troubles. Thus, a CIVIL DEFENCE structure scheme was drawn-up for all echelons, economic organisation, localities and regions, containing special line services: sanitary, chemical protection, transmission and alert, restoration and wreckage removing, guarding and order, lights camouflage, disguising protection and sheltering, firemen.

The protection methods diversifying were imposed by the extension of CIVIL DEFENCE problems comprising sphere, appearance of new problems related to natural calamity and disaster risks moreover environmental radioactivity increasing. Thereby, in 1962, an environmental radioactivity control network was set-up, with more stations as

part of hydrometeorological network and a technical co-ordination committee was formed, with experts from different ministries. At the same time, a radiation hygiene network was organised, with laboratories as a part of antiepidemical sanitary centres (Annex 1).

To insure the leading staff and formations preparing in the whole territory of our country, create possibility for the CIVIL DEFENCE to bring its contribution for urgent recovering of the position if there are natural calamities and disaster, in 1972 the Decree no.544 has been put in power, according to the territorial administrative organisation of our country and the NATIONAL DEFENCE LAW. At the basis of the CIVIL DEFENCE activities were established in a unitary conception, through the measures stipulated in the State Council Decree no 96 from 30 July 1975, related to intervention insurance if there is a nuclear accident completed with Decree no 140 from 20 March 1978 provisions, related to activity organisation prevention, for minimising and removing natural calamity, fire and disaster consequences and the CIVIL DEFENCE LAW 2/1978 in ROMANIA.

A new CIVIL DEFENCE LAW became necessary considering the new economic, social and political changes in ROMANIA, the involving of CIVIL DEFENCE system in many various activities, the increasing of calamity and disaster risk that may produce local calamities, the ratification of Geneva Convention from 12 08 1949 further protocols, related to victim's protection and the adhesion to these Conventions, and the similar settlement in other countries.

The CIVIL DEFENCE missions during the war and peace time, its role in calamity and disaster interventions, its duties regarding to the CIVIL DEFENCE of ministries, central public and local administrative, taking the constitutional provisions and other legal instruments into consideration, are clearer synthesised in the new legal instrument project. According to this, the CIVIL DEFENCE is a constituent part of our country defence, which insure the public, cultural and material asset's protection in event of war, calamity or disaster, and participate to the territorial and economic preparedness for defence by specific means and activities.

The CIVIL DEFENCE measures are established in a unitary conception according with the other country defence preparing measures and are foreseen on peace time in civil defence plans and other district municipal, city, commune and economic organisation operative documents. These CIVIL DEFENCE measures are applied in comparison to the local and economic organisation importance, and realised both peace time and special situations, on the basis of Country Defence Supreme Council decision

### CIVIL DEFENCE ORGANISATION IN ROMANIA

Civil Defence in Romania is organised in peace time at ministries, other central and local State administrative organisations, county and local, economic organisations and public institutions, on the territorial-administrative and working place principles (Annex 2)

The organisation structure of Civil Defence Staffs, expert committees, Civil Defence teams

The Civil Defence units and teams train, co-ordinate and lead in case of war the public and goods protection. the normalising of the social-economical activities, searching

and rescuing of victims, disposal and removing the effects of air-attack and attacks with NBC and conventional weapons, and in peace time providing help in case of any disaster

The Romanian Civil Defence carries on its activity in according with the international humanitarian principles. It includes the whole society, being part of the activity schedule of all local and central administration staffs, companies and public institutions.

In case of war, the Romanian Civil Defence acts in according with Geneva Convention from 12 August 1949.

The Minister of Defence acts also as the Head of Romanian Civil Defence. He leads, manages and controls Civil Defence activities, according to Romanian laws and orders of Supreme Council of Defence.

The General Inspectorate of Civil Defence is the executive institution. It established the idea regarding the preparedness and Civil Defence response procedures, technical and financial support and achieves the collaboration with similar foreign institutes and co-ordinates the research.

The Ministers, the heads of Romanian administration, the heads of the counties, the mayors, the general managers of companies and public institutions are all heads of Civil Defence System.

The Civil Defence teams, expert committees and Civil Defence Staffs carry-out the technical guidance and the Civil Defence preparedness for all territory.

#### CIVIL DEFENCE MISSIONS

The main Civil Defence missions in Romania are.

- public alert and alarm in case of disasters or air-attacks,
- public sheltering, evacuation and protection against NBC and conventional weapons and disasters;
- cultural assets, goods and stuff protection;
- mitigating and removing of air-attack consequences, calamities or disasters;
- preparedness of the public for civil protection.

## **2. THE MAIN CALAMITIES AND DISASTERS THAT ROMANIA HAD FACED**

### **Earthquakes**

Because of their activity manner and effects, the earthquakes hold a special plot among the disaster that could take place in Romania. Earthquakes appear at small and middle depth (20-100 km depth) or surface (counts seismic motion) as a result of geological structure of Romania zone. Depth earthquakes with more than 6-7 magnitude appear in Vrancea zone, and the surface ones in the West and north-west of our country - Banat, Crisana and Romanian Plain zones (Annex 3)

The Earthquake from 4 March 1977, which through it's affected zone (70% from our country territory) loss and destruction proportion had overtaken all the other manifestation of this kind in our country, is the greatest natural cataclysm in the history of our country. On the Richter scale, the violence of vertically and horizontally in north-south and east-west direction manifestation was recorded at 7,2 degrees.

In less than a minute, the earthquake made important life casualties, enormous material damages more than 32000 houses had broken down or were seriously damaged, leaving unsheltered 35000 families; other almost 200000 buildings had suffered various destruction, but the greatest, irrecoverable loss was the 1750 human life casualties that grieved the whole people

### **Ground slips**

These calamities appear especially in the hilly zones of our country, because of their specific geological structures. These are facilitated in spring and autumn by the abundant, long standing rains, and by some earthquakes (Annex 4)

The greatest calamities of this kind had been produced in the last twenty years and they caused many goods damages and destruction of some way of communication (roads, railways).

In the last thirty years, 10 important ground slips took place - in 1971, 50 persons lost their lives, and in 1979 and 1980, 110 buildings and large country road portions were destroyed in DAMBOVITA county

### **Floods**

These calamities appear as a result of abundant long-standing rains, snow meetings or downstream of the hydrotechnical work as a result of their damage or destruction (Annex no 5). In the last 50 years, the main flood was produced on Moldova rivers in 1932, Muntenia rivers in 1940, and serious one in 1970 affected almost all the country. The material damages and human casualties were significant. 1280 localities were affected, with 170 victims registered, ten thousands of people homeless and more than a thousand million material damages (then). Also, 83 life casualties, 550 economic organisation affected, a million ha agricultural areas flooded, more than 200000 animal and almost 3 millions fowls loss, has been produced in the 1975 catastrophic floods.

Other natural calamities can also affect from time to time the territory of our country. The snow coverings are sometimes blocking the roads or railways, destroying and deteriorating the power stations, water and gas stations, and telephonic-wire system, as a result of an abundant, prolonged snowfall in association with snow storms. Thereby, disturbance in economic and social activities develops and sometimes even life casualties appear. In 1953-1954, 1967, 1974 and 1985 winters took place such catastrophic snowfalls. There was a small number of victims-less than 20 cases-especially among the tourists and persons overtaken by the snow storms in their cars, far away from localities.

The prolonged droughts are relative periodical disasters and affect some parts or the entire territory of our country, always producing many damages (at least a million dollars). In 1947 and 1993 have taken place the most important droughts, including the biggest part of our territory and with greater damages, compromising the harvest.

### **Industrial accidents**

For our country territory, the chemical industry and other national economic fields that use, deposit or transport toxic, inflammable or explosive chemical products, represent risk sources (Annex no 6). This implies chemical products (industrial toxic substances)

such as: ammonia, chlorine, sulphurs dioxide, hydrogen sulphide, hydrogen, propane, butane and liquid oil derrick gases; liquid oil products. The most important accidents of the latest years were: chlorine release resulting from a tank explosion in a cellulose and paper factory (1939, Bucharest), ammonia release (1979, Bucharest) and a release of acetone anhydride (1985, Falticeni), and plant explosions (1978, Pitesti and 1985 Teleajen-Ploiesti).

These accidents affected especially the inside of the industrial unit and the few tens of death and wound persons belong to their staff.

### **Nuclear accident**

Although Romania did not own a nuclear power station yet, there is a permanent nuclear accident risk, considering this kind of energy power station owned by our neighbours. Thus, the nuclear accident of CHERNOBYL affected our entire territory, exceeding for 2-3 times air and 10-20 times sediments' contamination values - the highest approved values.

At the end of 1994, in Romania will function at CERNAVODA the first nuclear power unit - CANDU type, one of the most secure nuclear reactor type in the world.

### **Fires**

Although in Romania there were no important fires, however some fires with serious consequences took place, such as: Petrochemical Enterprise from Pitesti (1974 and 1978), Teleajen (1983 and 1985) Synthetic Rubber Technical Product Enterprise-Pitesti (1978), Fibres and Threads Enterprise-Sintetica Savinesti (1976, 1986, 1990), that make much human victims, millions of lei damages and prolonged production activity interruption.

**Road and railway accidents** that took place in our country haven't catastrophic aspect and the great number of victims is a result of daily losses totalling, owned to these types of disasters

## **3. PREVENTION, PROTECTION AND INTERVENTION ACTIVITIES AND MEASURES IN THE EVENT OF CALAMITY AND DISASTER**

According to legislative provisions in force, the CIVIL DEFENCE has the responsibility of supervising and achievement of prevention protective and intervention activities and measures, if there are calamities and disasters that could affect the Romanian territory

The General Inspectorate of Civil Defence as a national organisation and its subordinate county organs have realised with the other Civil Defence system constituents

### **A - PREVENTIVE MEASURES**

These activities and measures were realised for the event preceding period and implied the responsible organisations for activity's regulation in that filed and risk source objective

In this sense, the following activities were carried on:

a) The Risk Identification and Evaluation

All the disasters and catastrophes that could affect Romanian territory, and zones, where they demonstrate their destructive action, were identified by geographical position, geological and meteorological conditions, national economic structure and disaster event appeared in our country through the time studies.

Then, the calamities and disaster's magnitude, their consequence's volume and their implications were evaluated. In the view to agreement concluding, for risk identification and evaluation and common intervention (at request) to near-frontier risk objectives, were established contacts with our neighbour countries lately.

b) Technical and Organising Measures

Technical and organising preventive activities and measures were conceived on the basis of information, calamity and disaster data and risk evaluation. These activities and measures were conceived for mitigate and prevent calamity or disaster appearance, and to minimise human loss and material damages.

A measure's ensemble destined to contribute at the population, territory and economy preparation from Civil Defence point of view were elaborated by the Civil Defence system specific organisations with this end in view.

Settlements and documents related to the building licence given by Civil Defence that stipulate the civil defence shelter fitting out also appeared, and this licence is compulsory for any new building type construction or the extend of an existent one.

A series of folders containing calamity and disaster prevention and behaviour in these cases was drawn-up, published and distributed to the public.

c) Notification, Information and Alert Activities and Measures

A proper calamity and disaster notification system were insured to achieve the population, organisations and teams-responsible for the prevention and protection insurance-information and alert to insure the measure's appliance and prevention activities developing to mitigate the loss and damages.

To insure the information and alert, the system in force uses specific means and other facilities that exists at different organisations.

The General Inspectorate of Civil Defence and the County Civil Defence Staffs based upon the information received from AA Defence Headquarters and Navy Headquarters, provide the alarm and alert of the lead central and local administrative staffs, local Civil Defence Staffs, expert committees and Civil Defence teams.

Air-attacks risks are informed through the "air pre alarm", "air alarm" and "ceasing the alarm" situations.

The Civil Defence General Staffs realise natural calamities and disaster's information and alert on the basis of Civil Defence County, locality or economic organisation Chiefs involved.

The following rules are introduced for public alert "air attack alarm", "chemical alarm", "ceasing the alarm", "disaster alarm" released through all civil defence informing and alert means

All the citizens must know the alarm rules and rules they have to follow in case of event and the civil defence educational system prepares the public

The Information and Alert Centre were set-up at the General Inspectorate of Civil Defence level, for an opportune information and alert of local public administration organisations and population, which collect information related to the calamities and disasters produced all over the national territory, to achieve the complete or partial information and alert of the country

#### d) The Supervising and Control

The prevention activities and measures applied had led to a supervising and control subsystem creation to supervise the insurance criteria respecting in case of any risk source evolution, and points out the risk appearance, and determine its characteristics (magnitude, consequences and implication, evolution in time. .)

Thus, specialised departments have at their order the national system of the environmental quality parameters supervising and control (chemical, radioactive, biological, physical). At every county level there is at least one specialised laboratory created in this end of view, specific Civil Defence, army, other ministries' formations The Earth Physics Centre realises the seismic supervising, with its own continues supervising station's network

The hydrological network, organised on zones (basins), has its own supervising system as well All these supervising and control subsystems are in permanent contact with General Inspectorate of Civil Defence Information and Alert Centre

## B - PROTECTION ACTIVITIES

Protection specific measures, methods and proceedings were established as a result of our country affecting calamities and disaster's identification and assessment, such as

#### a) Protection Activities Planning

"Emergency Plans if there is calamity and disaster" were established at national, county, locality and source level, to realise the protective activities and measures According to Romanian General Inspectorate of Civil Defence established measures, the emergency plans are drawn up on fields of responsibility Protection measures achievement and intervention returns to public and risk source authorities The emergency plans comprise specific measures for every calamity and disaster type, activity proceedings

for every system compound; human and material resources insurance proceedings necessary for the plan application

#### b) Individual Protection and Shelter

For protecting themselves, the public buy gas-masks and individual anti-chemical packs. Civil Defence teams, chemical reconnaissance squads and anti-chemical protection teams are equipped with protection suits and isolation masks and apparatus.

CIVIL DEFENCE instructs the public to make simple protection kits available in their working places or at home and how to use them

Available shelters insure good public protection. For protecting the public according to the national economy-mobilisation plan, new shelters are built and arranged using the characteristics of the land, the basement of the buildings, tunnels, metro and underground facilities arranged for this purpose

The resistance of materials, shielding capacity, explosion type, blast quantity, calibre and distance from the discharge determine the shielding level. It is differently achieved, depending on the towns and company's importance.

#### c) Evacuations

Population protection through evacuation is carried out by removing some special categories of public and goods away from the potential air-attack areas. According to the Romanian laws, ministry staffs, local and central state administrative organisations and economic organisation, some public and important goods categories are stipulated. This action insures the permanence of the economical activity in case of war, decreasing the effects of air-attacks against public and goods as well as the protection of the public from towns and villages potentially flooded in case of drain cracks

Evacuation Committees are established both at national and local level to prepare, support and conduct the evacuation

To support the evacuees, Civil Defence intervention teams established assembling, board, receiving and distribution points

The heads of local Civil Defence and other personnel have responsibility for the receive, accommodation, foodstuff supplies, medical assistance and other needs of the public.

#### d) Intervention System Organisation

The General Inspectorate of CIVIL DEFENCE prepares and carries out activities and rules for limiting and removing the effects of air-attacks and calamities or disasters, at national, county, locality level to ensure an effective intervention.

Under the leadership of the heads of CIVIL DEFENCE, the staff, expert comities and CIVIL DEFENCE teams organise and carry out the actions for locating and removing the effects of disasters or air-attacks.

CIVIL DEFENCE plans, public and goods evacuation plan and other operations documents stipulate these activities; all the local and central leaders develop these plans



The magnitudes of air-attacks, the available time, the quantity of information and the need of managing some rapid actions determine the effectiveness of above actions

During these actions of locating and removing the effects of disasters or air-attacks the CIVIL DEFENCE staff and expert comities take care of: continuity of searching the affected areas, getting information about casualties and damages; reporting to the head-quarters the state of the operation, organisation and maintenance of continuous collaboration; permanent control of local CIVIL DEFENCE staff and teams.

#### e) Explosive Ordnance Identification and Disactivation

Even in peace time this mission engages great efforts for detecting, locating, disactivation, transport and neutralisation of explosive ordnance founded on the various locations.

CIVIL DEFENCE mine sweeper teams carried out the cleaning of all kind of ordnance, ensuring the personnel and public safety against unexpected explosions.

Until the arrival of CIVIL DEFENCE mine sweeper teams, special measures for alerting the public about the danger and for the law enforcement are carried out.

#### f) Public and CIVIL DEFENCE General Staff Comities and Teams Preparedness and Training

Protection measures and activities application are ensured by a proper preparedness and instruction programme. Trough the GENERAL INSPECTORATE of CIVIL DEFENCE, there are established schedules, forms and period of training any category of personnel.

Ministry, central and local organisation, municipal and locality CIVIL DEFENCE Chiefs are prepared both by General Staff training exercises, CIVIL DEFENCE appliances participation and CIVIL DEFENCE NATIONAL preparedness Centres.

For conducting specific and complex actions as a result of air-attacks with NBC and conventional weapons, for search and rescue, for getting information about the type and the quantity of looses and for providing first aid, the military units and CIVIL DEFENCE teams carry out the training. For this purpose, CIVIL PROTECTION practice grounds specific halls appropriated basements as shelters are used

During the training and during the CIVIL DEFENCE exercises, based upon adequate guidance, the personnel improve its skill to organise and conduct the intervention according with specific given situation for locating and removing the effects of disasters or air-attacks and normalising the economic and public activities.

CIVIL DEFENCE uses courses, movies, pictures, mass-media exercises that demonstrate the NBC and conventional weapons, disaster's effect, or give information about individual and collective protective means for public training.

#### **4. ROMANIAN CIVIL DEFENCE IN POST "COLD WAR" ERA**

The important changes during the last 3-4 years after the "cold war" end engage the European Countries to reconsider the security and defence policy taking in account the collaboration among States according to S C E C principles and the international treaties concerning the reduction of conventional weapons and forces. This concept established new relation both in general and specific perspective

In this new perspective, Romanian Civil Defence concept has to be established.

Considering the international revolutionary changes since 1989, Romanian Civil Defence had developed new relationship with similar foreign organisations involving co-operation and mutual activities for increasing the effectiveness for protecting the public and goods in case of war but especially in case of disasters.

To achieve its main purpose of protecting the public and response in case of disasters, in same time with the Romania's join to the Geneva Conventions and to various UN Organisations, Romanian Civil Defence tries to improve its structures and principles, to develop its role and mission and get knowledge from other States' experience in this field.

New laws and guidance that emphasise the role of Civil defence, a better involving of all levels of decision makers, getting support of the entire public to join the whole effort to achieve Civil Defence measures have been written.

Not ignoring the occurrence of a war, but taking in account that after the "cold war" end the effort must focus on disasters, new solutions for developing and modernising the alert and alarm system to prevent the public in case of disasters, especially in nuclear, chemical risk zones and the flood area risk near the dams have been developed.

For a better training of Civil Defence personnel, expert committees, Civil Defence teams and public to face the emergency situations new guidance and concepts are developed.

New plans and guidance according to disaster types, the insurance of needed supplies, the training of the leading personnel according to its new duties and train level checking through Civil Defence exercises are developing now

In this time Romanian Civil Defence contributes to the improving and developing medical assistance, especially for increasing the effectiveness of the actions carried out by the first aid mobile teams and surgery first aid teams in case of disaster.

The increasing of the sheltering capacity and the improvement of the public shelters to achieve a better shielding in case of war so that for a medium time the entire population would have good protection have been emphasised.

All these activities highlight again the important role of Romanian Civil Defence for preventing some accidents as well as for protection and intervention in case of disasters that could affect the public.

The 224/1990 Decree stipulates that Romania adhered to the 1st and 2nd Protocol of the Geneva Convention concerning the protection of the victims due to international or local conflicts

Since 1989, Romanian Civil Defence has developed new relationships with similar organisations from Hungary, Moldavia, Russian Federation, Switzerland, Italy, France, Canada, Czech Republic, USA, Ukraine and Germany. In this respect, Romania attended

to international conferences, Civil Defence trades, various courses and other activities to improve our own Civil Defence system and to gain experience from other countries point of view.

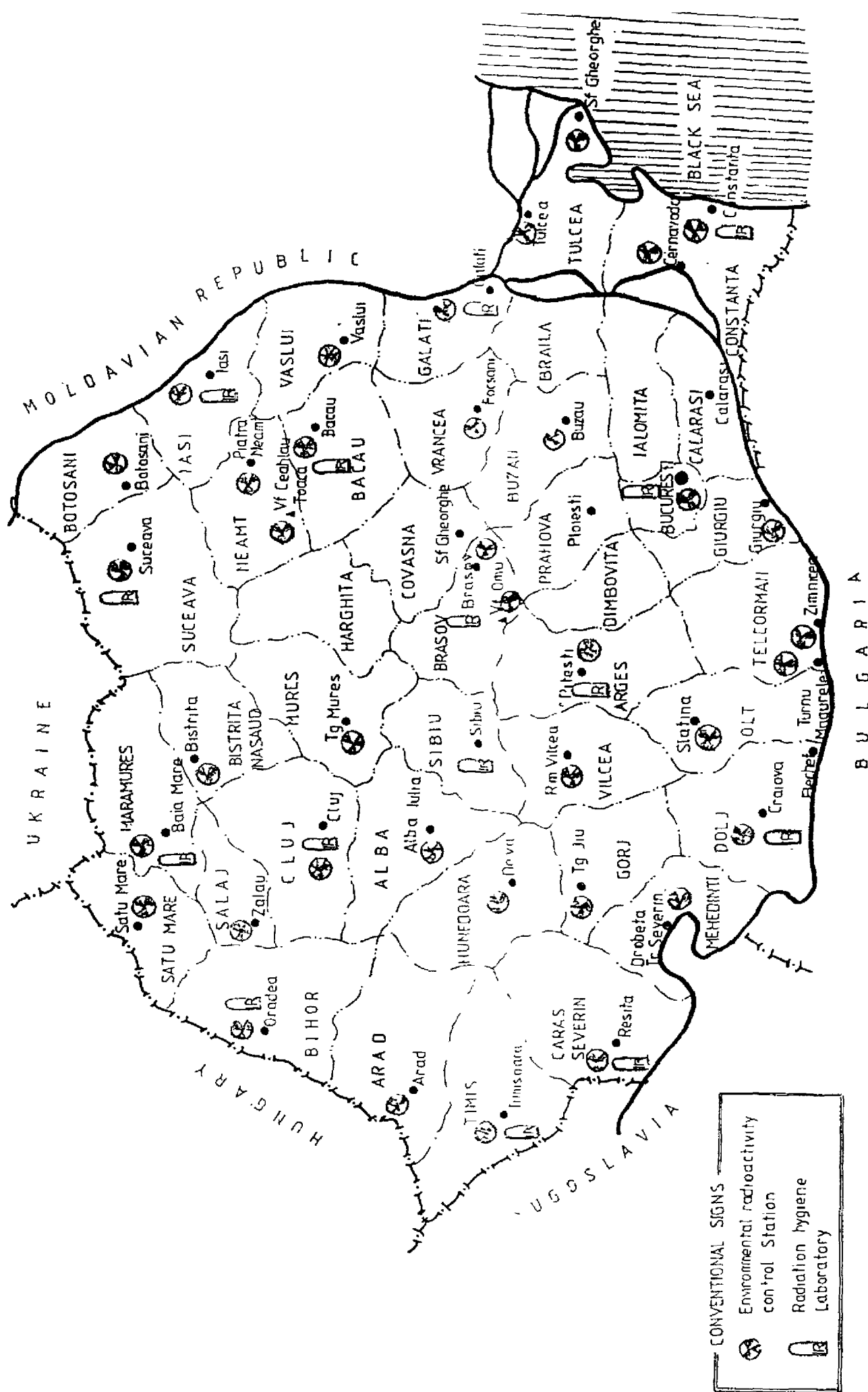
It is provided that in the future, some activities to be realised, such as. new law promotion to redefine the CIVIL DEFENCE missions and activities and reorganise the action system in the calamity and disaster events, organisation structure and action concept perfecting, to decentralise the prevention, protection and intervention management; developing of instructions and preparedness systems in specific centres for all staff categories, to develop and perfect the prevention, protection and intervention measures

There is also provided the improvement of teaching base for teams' instruction and public education; regulation of resource insurance for technical and material maintenance of the base preparedness, instructions and intervention; diversifying of co-operation relationship with specific organisation of other countries and adhering to International Organisation to initiate intervention in case of necessity.

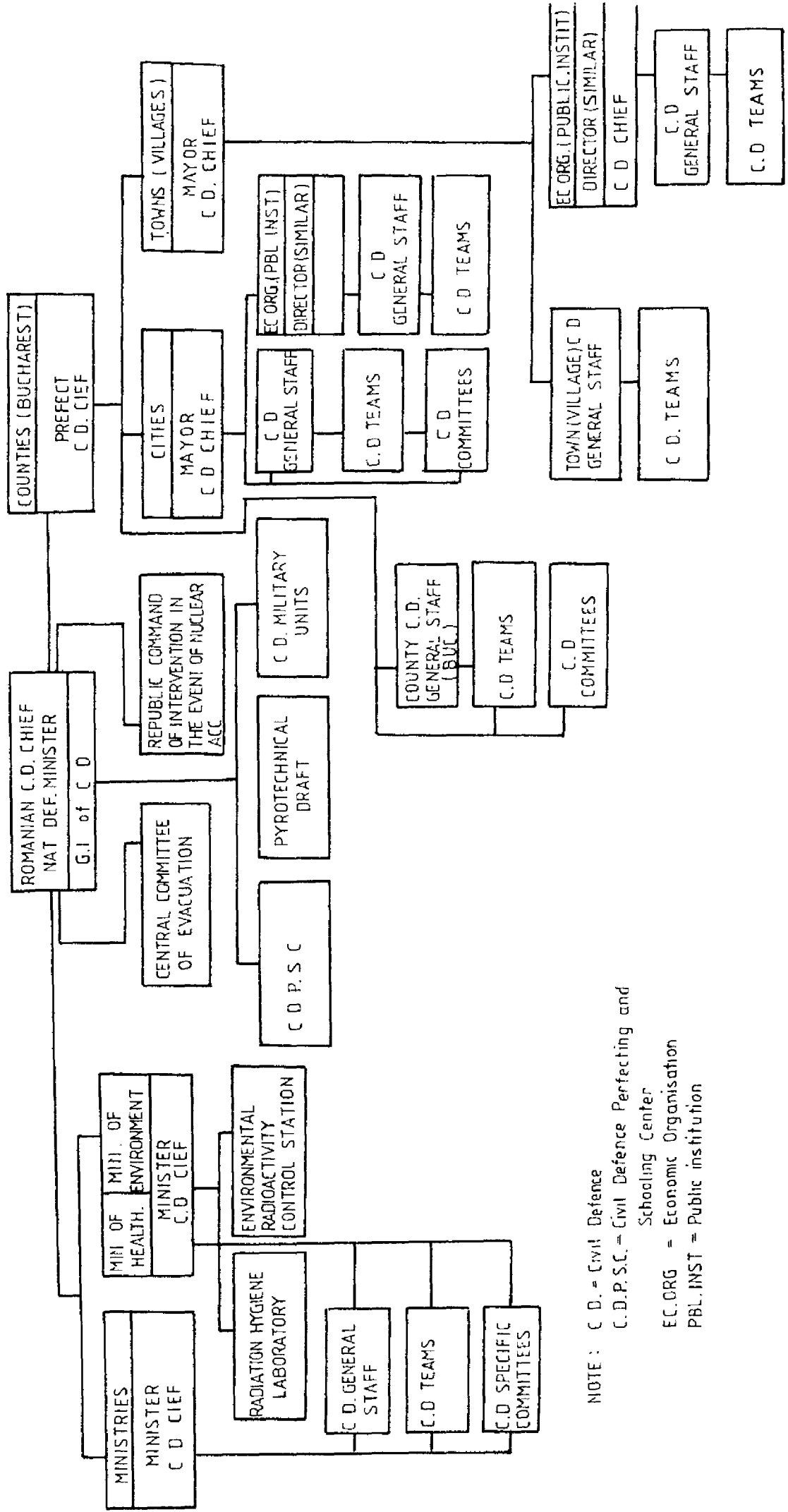


In continuous perfecting and modernisation, the Romanian CIVIL DEFENCE remains an important post of strength and means to insure public and goods protection, normalising the public and economic activities, located and removing the effects of disasters or air-attacks

# RADIOACTIVITY SUPERVISING SYSTEM

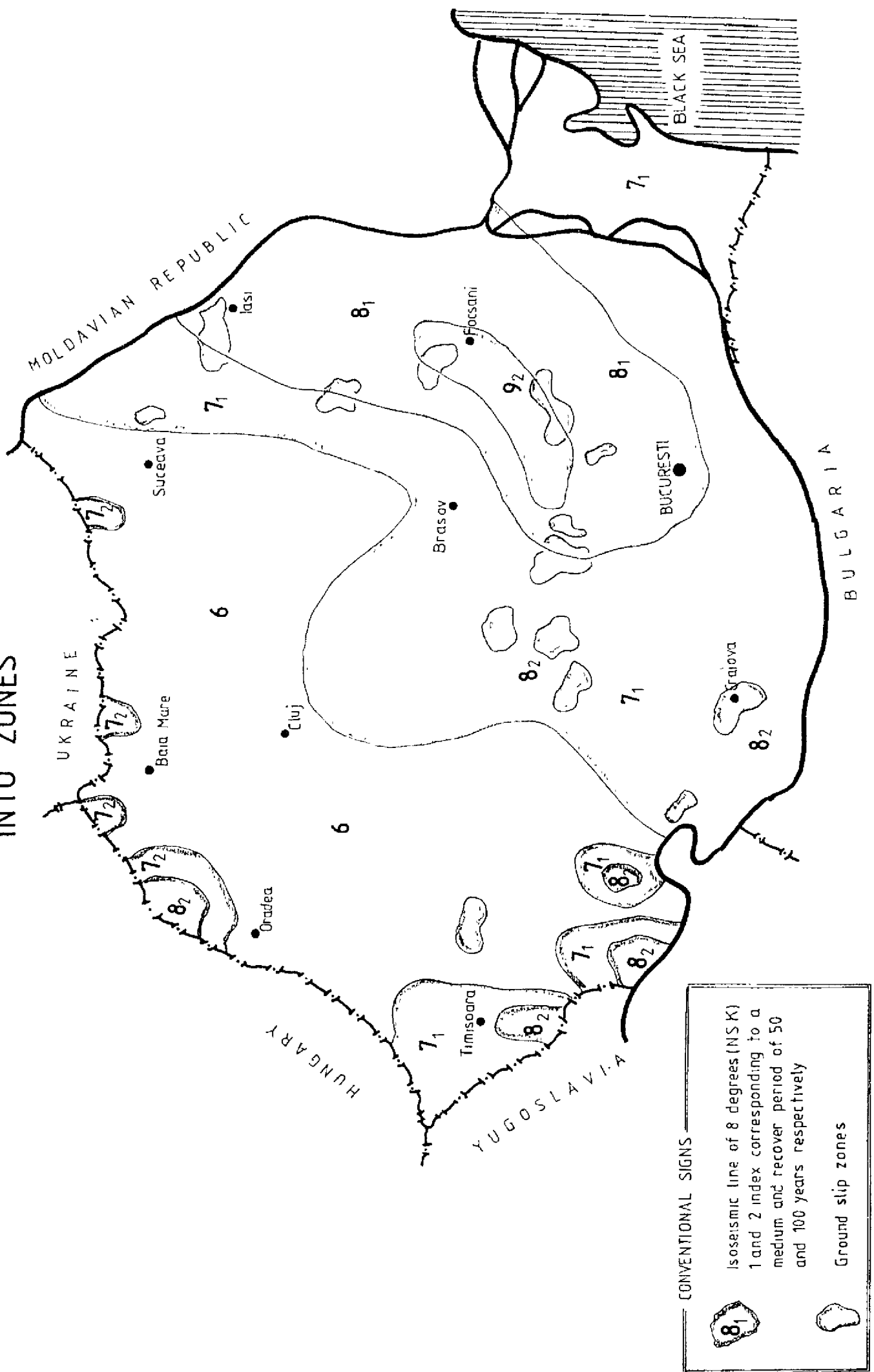


# CIVIL DEFENCE ORGANISATION

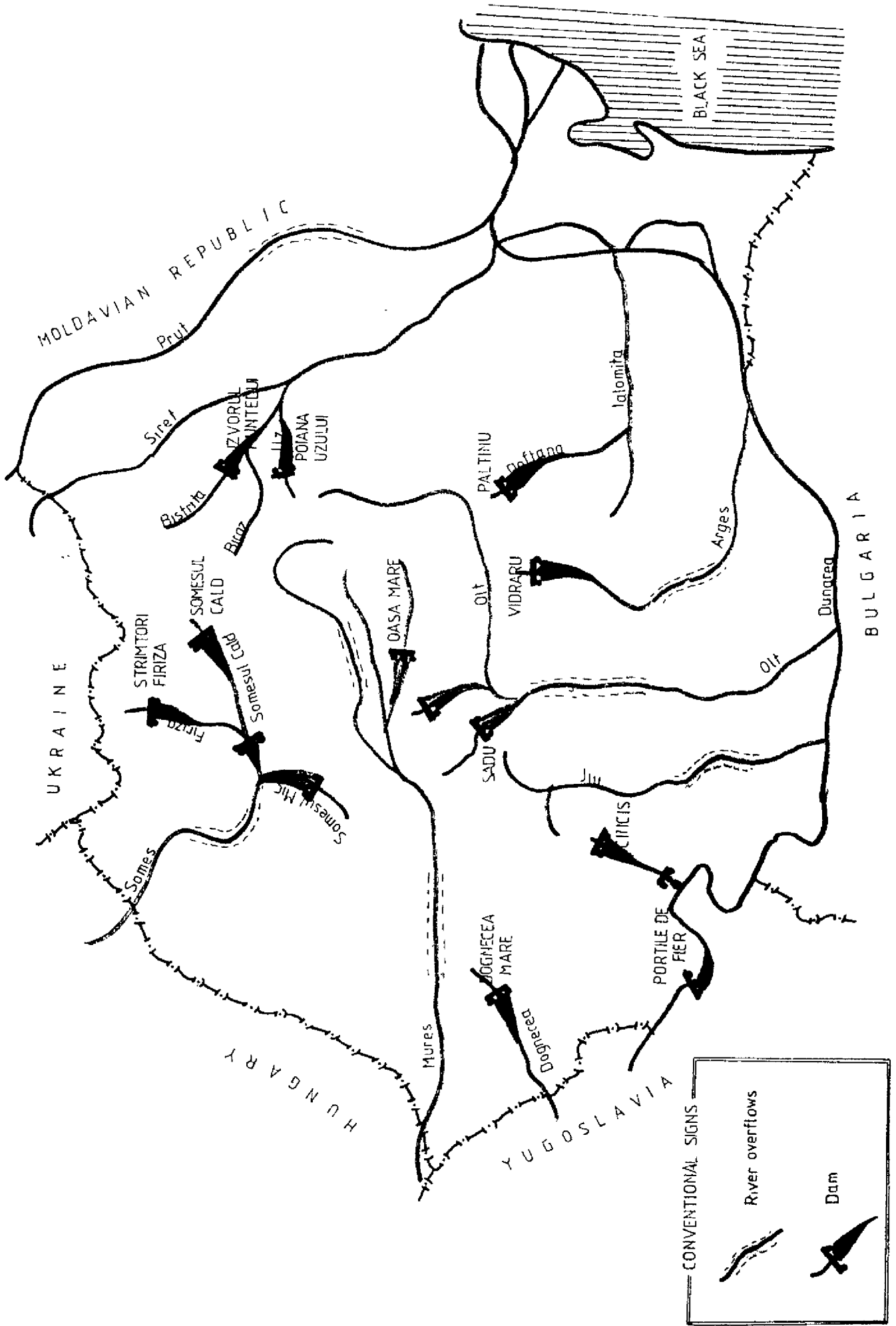


NOTE: C.D. = Civil Defence  
 C.D.P.S.C. = Civil Defence Perfecting and Schooling Center  
 EC.ORG = Economic Organisation  
 PBL.INST = Public institution

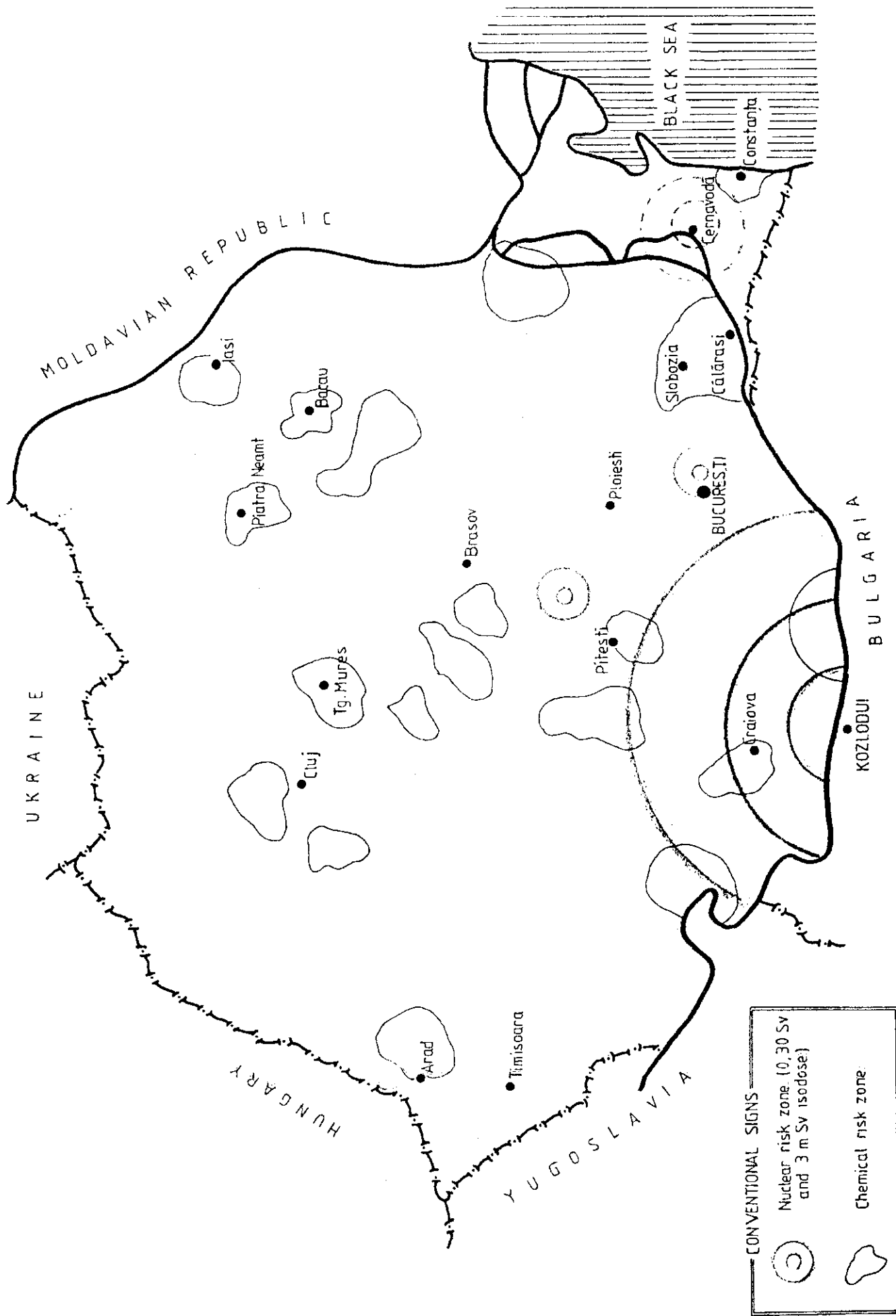
# ROMANIAN SEISMIC AND GROUND SLIPS DIVISION INTO ZONES



# FLOOD ZONES RESULTING FROM RIVER OVERFLOWS AND DAM DAMAGES



# NUCLEAR AND CHEMICAL RISK ZONES





# INFORMATION TRAFFIC IN THE EVENT OF CALAMITY AND DISASTER

