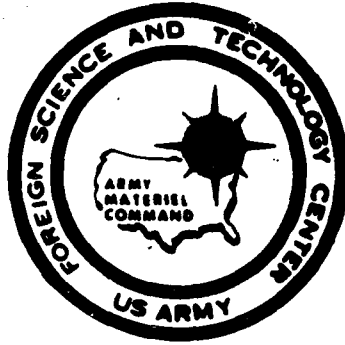


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# US ARMY FOREIGN SCIENCE AND TECHNOLOGY CENTER



## SAFETY MEASURES FOR THE PREPARATION AND APPLICATION OF POISONED BAIT FOR COMBATING RODENTS

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All poisonous chemicals employed as effective agents in poisoned bait for rodents, including zookumarin, ratindan, and zinc phosphide, are highly toxic for man and require particularly careful observance of safety rules. The application rate must not exceed (by preparation): zookumarin--2.5 kg/hectare, ratindan--1.5, and zinc phosphide--0.4 kg/hectare.

Particular attention is devoted to the careful observance of recommended concentrations of the preparation: if the quantity of poison required in order to treat the product used as bait is reduced, the effectiveness of the bait will be less than expected, while an increased quantity of the preparation may harm useful animals and birds.

Poisoned bait is prepared either in a specially isolated area, equipped with a fume hood, or in special areas located not less than 200 m from living areas, cattle and poultry farms and areas with concentrations of useful wild animals and birds (forested gullies, ravines, and the banks of water reservoirs and rivers).

From the moment of delivery of the toxic substances and the required stock to the field camp or area, it must be continuously guarded. Workers who prepare the bait must be provided with water, soap, towels and a first aid kit in the event that first aid is required.

Toxic substances must arrive at the preparation area for poisoned lures in a securely closed container, equipped with a label or sticker with the name of the preparation and the inscription "Poison!".

Supplies of poison chemicals and the remains of the prepared bait may be stored only in a special area.

It is categorically forbidden to store products, drinking water, forage and articles of everyday use near the storage areas for poisonous chemicals and bait.

Workers prepare the poisoned bait in overalls (smocks) which have no external pockets; they wear mittens or gloves, and rubber boots or wrapped boots; the respiratory organs must be protected by an appropriate respirator and the eyes by goggles.

In order to provide security, the preparation of the bait is mechanized by employing special mixtures or simple devices which may be made on the spot (for example, an iron drum, installed horizontally on two supports and rotated with the aid of a handle, etc.).

During bait preparation at the field camp (operations involving the opening of packages, the weighing or measuring of portions of poisons, and the pouring of these into a tank and mixing with the bait product) the workers must face the bait so that the wind blows to the side rather than toward the chest or back (the toxic dust and gases will thus be carried away). In working with zinc phosphide, it is first necessary to mix the grain with oil and then with the poisonous chemicals, rather than vice versa.

During breaks and upon finishing the work, all persons who have come in contact with poisonous chemicals or with the poisoned bait must wash their hands and face with soap, and rinse out their mouths with clean water.

At the conclusion of the working day the workers must remove all special clothing and footwear at the place of bait preparation; they must carefully clean these and store them in a special area or tent; other protective devices are also stored there, including goggles, respirators, etc.

It is categorically forbidden to carry off special clothing, footwear, and individual protective devices from the area where the bait is prepared, or to store these in living quarters.

Every day after work it is necessary to wash the entire body carefully either under a shower or in a naturally flowing stream.

Mixtures, tanks for the preparation of bait, agitators, shovels, pitch forks, ladles and other auxiliary objects must be washed when the work is finished with hot soapy water, which is then disposed of in a special pit. All the poisonous containers as well as stock which has been utilized and which does not yield to cleaning must be destroyed: wooden articles are burned and metallic ones are crushed and buried. Tools and containers which are suitable for repeated use for their original purpose are decontaminated in accordance with the rules indicated above.

Poisoned bait which is not utilized is surrendered under a receipt to the main warehouse of poisonous chemicals for storage or is transferred to another organization which is combating rodents. Accidental spills and remnants of poisoned bait, unsuitable for further use, are burned in a pit, after saturating them with fuel.

After the work is finished, the entire area of the field camp where the poisoned bait was prepared is dug up to a depth of not less than 25 cm by turning layers of the earth removed. The spaded surface is covered with slaked lime.

If the bait was prepared in a building, all spills of poison and bait are cleaned up and are placed in a pit and buried. After cleaning, the floors are washed and the area is treated with a solution of calcinated sodium carbonate (200 grams in a bucket of water) or with a 5% solution of slaked lime, and then with clean water. The cleaning liquids are poured into the pit.

Only after the accomplishment of the operations indicated may the field camp or building be left unguarded.

The person responsible for the work must, in good time, notify the village soviet, the administration of the region in which the work is being carried on, the management of neighboring farms and the population concerning the planned periods involved in the conduct of the extermination measures and any required protection measures.

The spreading of the poisoned bait is accomplished either with special machines or manually. In connection with ground methods it is permitted, as an exception, to spread the bait with grain seeding machines, adapted for these purposes. When the bait is distributed or spread manually, dosage devices are employed (ladles, scoops, cups, etc.).

In order to combat gophers and field mouse-like rodents with the bait method, the basic preparation at the present time is zinc phosphide.

Usually preparations are employed from the group of blood anticoagulants, including ratindan-1 and ratindan-2 or zookumarin in order to combat rats in cattle-raising structures and in poultry houses, in connection with the de-ratting of contiguous structures, including living quarters. Zinc phosphide is employed under these conditions only if the indicated preparations are not available.

The spreading or open apportionment of bait is not authorized under the following conditions: in populated points and around those within the limits of the grazing area of cattle and the roaming area of poultry; around cattle raising and poultry farms within a radius of 500 m; in areas with concentrations of useful wild animals and birds, including forested gullies,

ravines, forested belt, the banks of water reservoirs and rivers, as well as in the grounds around these areas for a radius of 200 m.

In these cases the poisoned bait is introduced into burrows or into other natural or artificial cover. In connection with the aviation method of spreading bait, the workers who load the tanks work in coveralls, gloves and special footwear and protect their faces with a respirator.

During aviation work the signalmen must wear coats with hoods or use an umbrella.

It is forbidden to conduct aviation spreading of bait if the wind speed exceeds 5 m/sec.

When poisoned bait is spread on the ground, the workers must wear overalls (smocks, aprons) and mittens (gloves). The respirator is employed during loading of the bait in the bunker of the spreader and during the filling of sacks for manual distribution.

It is forbidden to allow cattle to graze on territory treated with poisoned bait for a period of time indicated in the instructions applicable to the given zone; appropriate and timely warning signs must be posted to this effect.

When poisoning is suspected it is necessary to call a doctor or to send the patient to a medical point, after having administered first aid.

The symptoms of poisoning from zinc phosphide include the appearance of pains in abdomen, nausea, belching, and then vomiting; for zookumarin and ratindan (in the event they appear in the alimentary tract) the symptoms are headache and pain in the area of the abdomen, nausea, and vomiting. Chronic poisoning causes hemorrhages.

First aid measures in connection with poisoning by zinc phosphide include the internal administration of a 1% solution of copper sulfate (one teaspoonful every 5 minutes) or a 0.1% solution of potassium permanganate (also one teaspoonful every 5 minutes) until the onset of vomiting. When vomiting ceases, administer a laxative: a tablespoon full of Glauber's salt or Epsom salts in a glass of water. In no case should milk, eggs, butter or fat be administered in connection with poisoning by zinc phosphide.

As a first aid measure in connection with poisoning by zookumarin and ratindan, the patient is given vitamin K tablets or the preparation "Vikasol" [menadione sodium bisulfite].

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<b>13. ABSTRACT</b>  Safety measures are outlined for the preparation and distribution of poisoned bait for rats and gophers. These include protective clothing for workers, decontamination procedures for the equipment used, and measures for the protection of human and domesticated animal life. First aid instructions are given for specific toxic agents.			

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