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Mr. George Milly, Chief, Plans & Eval Branch
Test Division, Technical Command, Army Chemical Center
Herbert Scoville, Jr.

APRIL 8 March 1949

Research Council Study of the Proving Ground Requirements of the
Chemical Corps

*logged
out 8 Mar 49.
file: RW
field tests*

Dear George:

Inclosed is a very rough copy of what we have been able to get
together on the RW phases of the Proving Ground report. This has
not been checked with anybody at Edgewood and certainly should
be before it is used too authoritatively. This is particularly
true of the estimates of the numbers of tests required. You
yourself probably have the best idea of this.

Neither Col. Hirsch nor myself will be in Washington during the
coming week. Go ahead and use this material as you see fit and
then when we come back, I shall try to help in any additional
way possible.

I hope this will be of some little use to you.

Sincerely yours,

Herbert Scoville, Jr.
Technical Director, AFSWP

Incl:
Draft as stated above.

Declassified by DNA, Chief, ISTS
WITHOUT INCLOSURE.

Herbert Scoville, Jr.
Date: 2/6/95

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NO. 2 OF 2 COPIES, SERIES ... A ...

RESEARCH COUNCIL STUDY OF THE PROVING GROUND
REQUIREMENTS OF THE CHEMICAL CORPS

IV. D. Procedures for Development of End Items.

1. Functioning Tests.

a. Dissemination.

Does not require active or tracer material.

Will be first tests on dissemination, to obtain several munitions which function satisfactorily.

Includes:

Initial static and low altitude drop tests of daughter type munitions (~~perhaps 10,000 tests~~)

Tests of fuzes for parent and daughter munitions.

Initial static and drop tests of parent munitions. (~~perhaps 1,000 tests~~). Large area required as tests will cover up to 1 square mile.

High altitude firing of "Bullrush" type munition to ascertain functioning of shell on impact.

(~~perhaps 2000 rounds~~).

Test of Ejection system from plane.

The areas used can be reused immediately once duds have been removed, and no radiation hazard need be present.

Ground of different degrees of hardness to determine

functioning characteristics is desirable. For final work not 1 sq. mi. would be needed. *perhaps 1/4 sq. mi. to allow for errors.*

b. Decontamination.

These tests can be laboratory or very small scale using inert or tracer quantities of agents. The tests will probably be made after various methods of decontamination

*Delivered by Aircraft
Ballistics
Parent breakup
Fuzing
Daughter*

Matching Reqs.

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have been tried and the most satisfactory known, in an effort to obtain the best equipment for the adopted method. Proving grounds will not be required.

2. Performance and Dispersion Efficiency.

a. Dissemination.

These tests will include the use of inert and tracer agents in the determination of most efficient particle sizes and chemical forms of the agent (static tests), the dispersion of agents from daughter munitions at various altitudes and meteorological conditions (static and drop tests with inert agent). These tests will include determination of size of areas covered by various types of munitions and will require perhaps 7,000 tests. RW tests will differ from CW and BW tests in that RW will contaminate specific areas and is not dispersed as an aerosol or designed to be carried long distances by the wind. Contaminated areas will be small and easily guarded. Contamination level will be low, and ~~contamination will be low~~

b. ~~Decontamination.~~

~~Decontamination tests of this type will be small with these tests we will be able to determine the efficiency of scale, using areas contaminated on developing dis-~~
~~of defensive measures and to determine the efficiency of~~
~~semination method. The efficiency of various~~
~~decontamination methods will be determined.~~

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3. Munitions Requirements Tests.

These tests will be done only on the munition which will be the final product, and will all require drop tests. Data will be obtained as to weathering effect, effect of buildings, etc. The tests will be with tracer amounts and made with both daughter and parent munitions, ~~(perhaps 500 tests)~~. These tests will require more area than the preceding tests, but the level of contamination will be no higher. ~~The areas will be available for reuse after a sufficient decay period so that the background will not interfere with the new test.~~ Use of animals ~~should be extremely limited.~~ ^{should not be required.}

The tests will also afford an opportunity to determine the effectiveness of proposed defensive measures against RW.

4. Operational Scale Tests.

Tests of a megacurie ^{type} ~~type~~ munition may never be permitted in peace time in the United States, and the necessity for such a test is doubtful. A ~~large area~~ ^{complete} munition filled with tracer should give all data necessary. Several ^{such} tests with tracer amounts may be required.

7. Development of Basic Information.

2. Studies of Defensive Aspects.

These studies will be combined with decontamination studies to ascertain the effectiveness of the weapon, the best way to counteract its effects and what preparatory measures can most profitably be used to nullify the munition. These, in

turn, will indicate how the weapon may best be used.

V. Survey of Chemical Corps Research and Development Programs.

A. Current Programs.

1. Dissemination.

The Cml C dissemination program is being carried out under Project 4-12-01-01, "Selection and Military Use of Radioactive Materials as Toxic Agents." This program is based upon the Joint NME - AEC Panel Report of 29 August 1948, which recommended that a prototype of a means for dissemination of RW agents be made within two years. The Cml C has been given primary responsibility within the NME for dissemination of RW. Project 4-12-01-01 has eight objectives for development of munitions. Of these only three will be pushed in the near future. They are:

- a. Airborne munitions to deny populated or otherwise critical areas for long periods of time, for both the "large area" and "small area" targets as defined in the Joint Panel Report.
- b. Combined high explosive and radioactive munitions.
- c. Air and/or surface munitions for support of troop operations through denial of terrain with gamma-active contamination and suitable for use during a planned evacuation.

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The use of gamma-active materials only is being considered at this time. Of the three objectives above, work is being concentrated on "a". Present plans involve using ~~submunitions~~, clusters, ~~or~~ prefragmented ^{or ejection of small munitions directly from the aircraft,} bombs/as the means for dissemination. To accomplish

objective (a) this program will require extensive field tests. *(This may involve some 10,000 functioning tests, 5000 performance and dispersion tests and 50 munitions requirements tests.)*

2. Decontamination.

The Cml C decontamination program is conducted under Project 4-12-07-01, "Methods, Materials and Devices for Radiological Decontamination." This program is designed to obtain the most effective means of eliminating radiological contamination. It will be done mostly in the laboratory, but the final tests should be field type, and could well be run in conjunction with dissemination tests. This program should be coordinated with those of the other services.

3. Others.

4-12-06-01 "Chemical Methods of Detecting Radiation"

4-80-04-03 "Evaluation and Modification for Radiological Warfare of Standard Individual Protective Equipment and Methods"

4-80-12-01 "Evaluation and Modification for Radiological Warfare of Standard Collective Protective Equipment and Methods"

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None of these projects will require field tests at a special proving ground. They can be carried out anywhere and as corollary work to the other RW field tests.

B. Anticipated Programs.

The Chemical Corps program, after completion of the initial phase, ~~will consist of work on the other objectives of~~ *will, if RW then appears feasible, continue their program on the three objectives listed and will also*

4-12-01-01, which are:

1. Subversive weapons for attack of individuals or small groups.
2. Airborne munitions to deny populated or otherwise critical areas for short periods of time.
3. Airborne munitions for attack against concentration of troops.
4. Surface munitions for attack against concentration of troops.
5. Subversive weapons for attack against populated or otherwise critical areas.

Work may also be done with the objective of using α or β emitting agents.

Also, consideration will have to be given to new ideas for use of RW, or new RW agents. These, if they look good, will require field testing.

VI.

A. Facilities Currently Used.

1. Dissemination.

At the present time, the only facilities available are at Army Chemical Center. These consist of several laboratories which have been converted for use with tracer amounts. More are being converted, and when the warehouse is done, enough laboratory space for tracer and "cold" work will be available. The area available for field tests is very small, and so far only inert agents can be used. The area is not large enough to test parent munitions. If permission could be obtained to use tracer agents, the tests would soon stop, since the available area is too small to handle the test program without reusing an area ^{This will be impossible} until the activity level had gone down enough.

Areas are available for field testing for which permission may be obtained to conduct large area tests using tracer amounts. However, few facilities are present, and a large construction program would be necessary. Dugway could be used on a special mission basis, but this type of approach would slow down the development program.

2. Decontamination.

When laboratories are completed at Army Chemical Center, the decontamination program can proceed up to the final test phase. At that time small area tests will be needed,

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and then the same problem arises as for dissemination -- where to get the area, and how to get permission to contaminate it. A satisfactory solution of the problem for dissemination will solve the problem for decontamination, as the same area can be used for both.

3. Others. -- Laboratory facilities only will be needed for chemical detection and individual and collective protection. There are not sufficient laboratories now, but will be soon at Edgewood.

B. Comparison of Current and Future Programs with Facilities.

1. Dissemination.

The present facilities seem to be entirely inadequate for the satisfactory completion of the present mission within the current time limit. A test site with a laboratory, "hot" transportation facilities, "hot" filling equipment, instrument maintenance and machine shops and living facilities for the employees will be needed. The testing might be done on a temporary mission to the test area with the permanent facilities at Edgewood, but this would seriously hamper the program.

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2. Decontamination.

If the ^{facilities for the} ~~dissemination problem of facilities is solved,~~ ^{are obtained,}
there will not be much extra needed for this.

3. Others.

All the Chemical Detection, Individual and Collective Protection projects need are the "warm" laboratories being set up at Edgewood now.