Section I
No. 4

NITRIC ACID

Nitric acid is used in the preparation of many explosives, incendiary mixtures, and acid delay timers. It may be prepared by distilling a mixture of potassium nitrate and concentrated sulfuric acid.

MATERIAL REQUIRED:

Potassium nitrate (2 parts by volume)
Concentrated sulfuric acid (1 part by volume)
2 bottles or ceramic jugs (narrow necks are preferable)
Pot or frying pan
Heat source (wood, coal, or charcoal)
Tape (paper, electrical, masking, etc. but not cellophane)
Paper or rags

SOURCES:

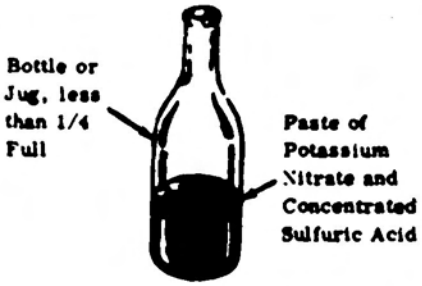
Drug Store
Improvised (Section I, No. 2)
Motor vehicle batteries
Industrial plants

IMPORTANT: If sulfuric acid is obtained from a motor vehicle battery, concentrate it by boiling it until white fumes appear. DO NOT INHALE FUMES.

NOTE: The amount of nitric acid produced is the same as the amount of potassium nitrate. Thus, for 2 tablespoonsful of nitric acid, use 2 tablespoonsful of potassium nitrate and 1 tablespoonsful of concentrated sulfuric acid.

PROCEDURE:

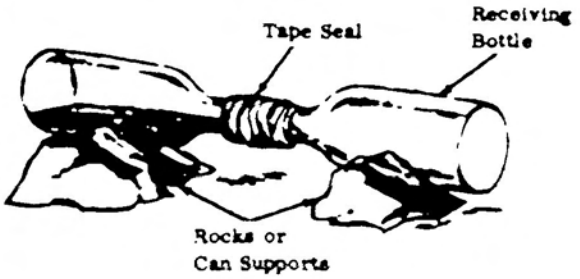
1. Place dry potassium nitrate in bottle or jug. Add sulfuric acid. Do not fill bottle more than 1/4 full. Mix until paste is formed.



CAUTION: Sulfuric acid will burn skin and destroy clothing. If any is spilled, wash it away with a large quantity of water. Fumes are also dangerous and should not be inhaled.

2. Wrap paper or rags around necks of 2 bottles. Securely tape necks of bottles together. Be sure bottles are flush against each other and that there are no air spaces.

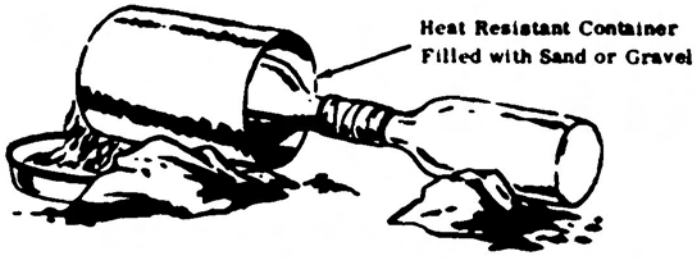
3. Support bottles on rocks or cans so that empty bottle is slightly lower than bottle containing paste so that nitric acid that is formed in receiving bottle will not run into other bottle.



4. Build fire in pot or frying pan.

5. Gently heat bottle containing mixture by moving fire in and out. As red fumes begin to appear periodically pour cool water over empty receiving bottle. Nitric acid will begin to form in the receiving bottle.

CAUTION: Do not overheat or wet bottle containing mixture or it may shatter. As an added precaution, place bottle to be heated in heat resistant container filled with sand or gravel. Heat this outer container to produce nitric acid.



6. Continue the above process until no more red fumes are formed. If the nitric acid formed in the receiving bottle is not clear (cloudy) pour it into cleaned bottle and repeat Steps 2 - 6.

CAUTION: Nitric acid will burn skin and destroy clothing. If any is spilled, wash it away with a large quantity of water. Fumes are also dangerous and should not be inhaled.

Nitric acid should be kept away from all combustibles and should be kept in a sealed ceramic or glass container.

FOR OFFICIAL USE ONLY

PREPARATION OF LEAD PICRATE

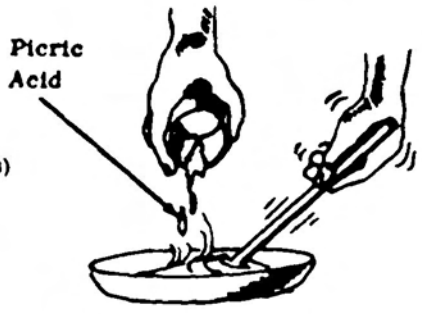
Lead picrate is used as a primary explosive in the fabrication of detonators (Section VI, No. 13). It is to be used with a booster explosive such as picric acid (Section I, No. 21) or RDX (Section I, No. 15).

MATERIAL REQUIRED:	SOURCE:
Litharge (lead monoxide)	Section I, No. 18 or plumbing supplies
Picric Acid	Section I, No. 21
Wood alcohol (methanol)	Paint removers; some antifreezes
Wooden or plastic rod	
Dish or saucer (china or glass)	
Teaspoon	
Improvised Scale	Section VII, No. 8
Containers	
Flat pan	
Heat source (optional)	
Water (optional)	

PROCEDURE:

1. Weigh 2 grams each of picric acid and lead monoxide. Place each in a separate container.

2. Place 2 teaspoons (10 milliliters) of the alcohol in a dish. Add the picric acid to the alcohol and stir with the wooden or plastic rod.



3. Add the lead monoxide to the mixture while stirring.

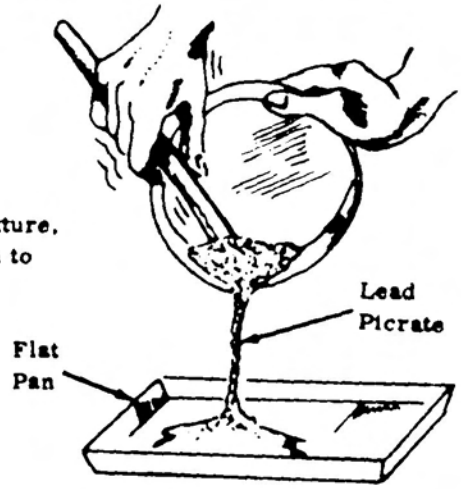
CAUTION: At this point the solution is a primary explosive. Keep away from flame.

4. Continue stirring the mixture until the alcohol has evaporated. The mixture will suddenly thicken.

5. Stir mixture occasionally (to stop lumps from forming) until a powder is formed. A few lumps will remain.

CAUTION: Be very careful of dry material forming on the inside of the container.

6. Spread this powdered mixture, the lead picrate, in a flat pan to air dry.



NOTE: If possible, dry the mixture in a hot, not boiling, water bath for a period of 2 hours.

Section I
No. 31

PREPARATION OF PICRIC ACID FROM ASPIRIN

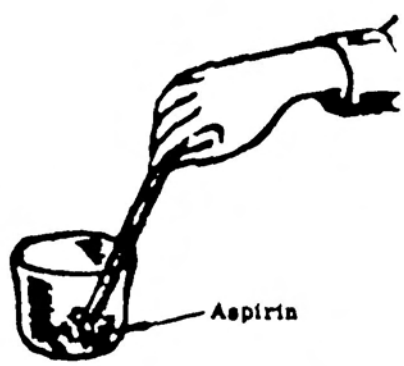
Picric acid can be used as a booster explosive in detonators (Section VI, No. 13), a high explosive charge, or as an intermediate to preparing lead picrate (Section I, No. 20) or DDNP (Section I, No. 19).

MATERIAL REQUIRED:

Aspirin tablets (5 grains per tablet)
Alcohol, 95% pure
Sulfuric acid, concentrated, (battery acid - boil until white fumes appear)
Potassium Nitrate (Section I, No. 2)
Water
Paper towels
Canning jar, 1 pint
Rod (glass or wood)
Glass containers
Ceramic or glass dish
Cup
Teaspoon
Tablespoon
Pan
Heat Source
Tape

PROCEDURE:

1. Crush 20 aspirin tablets in a glass container. Add 1 teaspoon of water and work into a paste.



Section I
No. 21

PREPARATION OF PICRIC ACID FROM ASPIRIN

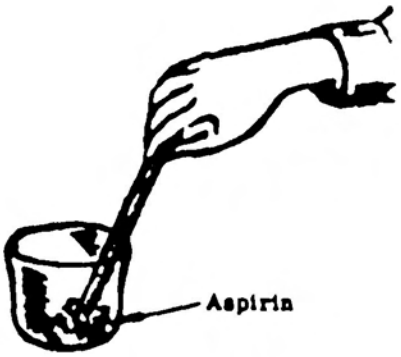
Picric acid can be used as a booster explosive in detonators (Section VI, No. 13), a high explosive charge, or as an intermediate to preparing lead picrate (Section I, No. 20) or DDNP (Section I, No. 19).

MATERIAL REQUIRED:

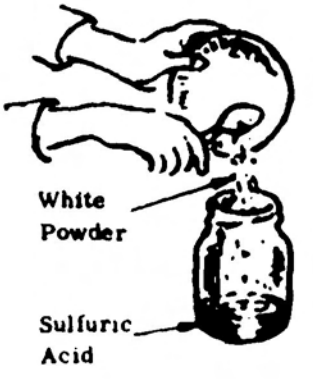
Aspirin tablets (5 grains per tablet)
Alcohol, 95% pure
Sulfuric acid, concentrated, (battery acid - boil until white fumes appear)
Potassium Nitrate (Section I, No. 2)
Water
Paper towels
Canning jar, 1 pint
Rod (glass or wood)
Glass containers
Ceramic or glass dish
Cup
Teaspoon
Tablespoon
Pan
Heat Source
Tape

PROCEDURE:

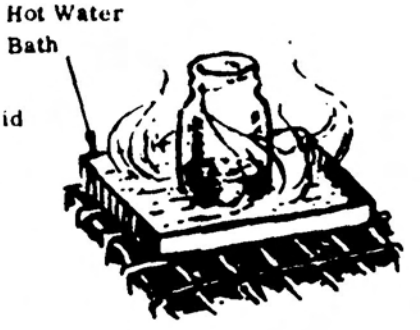
1. Crush 20 aspirin tablets in a glass container. Add 1 teaspoon of water and work into a paste.



6. Pour 1/3 cup (80 milliliters) of concentrated sulfuric acid into a canning jar. Add the white powder to the sulfuric acid.



7. Heat canning jar of sulfuric acid in a pan of simmering hot water bath for 15 minutes; then remove jar from the bath. Solution will turn to a yellow-orange color.



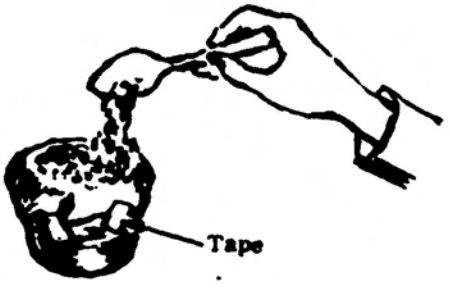
8. Add 3 level teaspoons (15 grams) of potassium nitrate in three portions to the yellow-orange solution; stir vigorously during additions. Solution will turn red, and then back to a yellow-orange color.

9. Allow the solution to cool to ambient or room temperature while stirring occasionally.

10. Slowly pour the solution, while stirring, into 1-1/4 cup (300 milliliters) of cold water and allow to cool.

11. Filter the solution through a paper towel into a glass container. Light yellow particles will collect on the paper towel.

12. Wash the light yellow particles with 2 tablespoons (25 milliliters) of water. Discard the waste liquid in the container.



13. Place particles in ceramic dish and set in a hot water bath, as in step 5, for 2 hours.

SODIUM CHLORATE

Sodium chlorate is a strong oxidizer used in the manufacture of explosives. It can be used in place of potassium chlorate (see Section I, No. 1).

MATERIAL REQUIRED:

2 carbon or lead rods (1 in. diameter x 5 in. long)

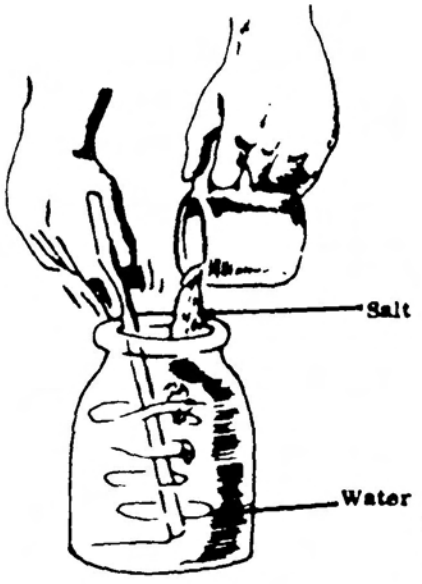
Salt or, ocean water
Sulfuric acid, diluted
Motor vehicle
Water
2 wires, 16 gauge (3/64 in. diameter approx.), 6 ft. long, insulated
Gasoline
1 gallon glass jar, wide mouth (5 in. diameter x 6 in. high approx.)
Sticks
String
Teaspoon
Trays
Cup
Heavy cloth
Knife
Large flat pan or tray

SOURCES:

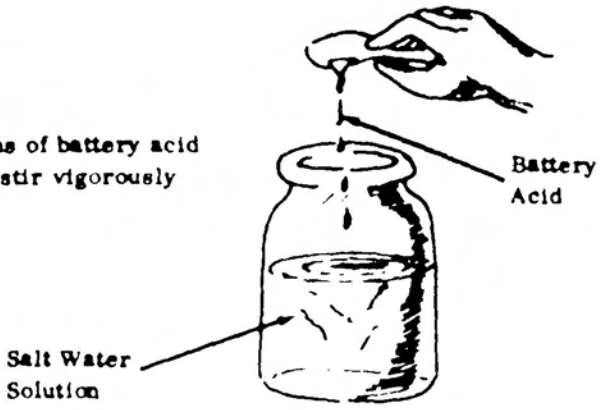
Dry cell batteries (2-1/2 in. diameter x 7 in. long) or plumbing supply store
Grocery store or ocean
Motor vehicle batteries

PROCEDURE:

1. Mix 1/2 cup of salt into the one gallon glass jar with 3 liters (3 quarts) of water.

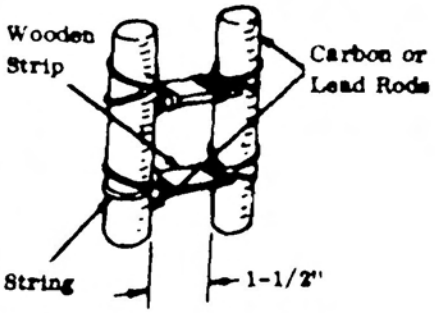


2. Add 2 teaspoons of battery acid to the solution and stir vigorously for 5 minutes.

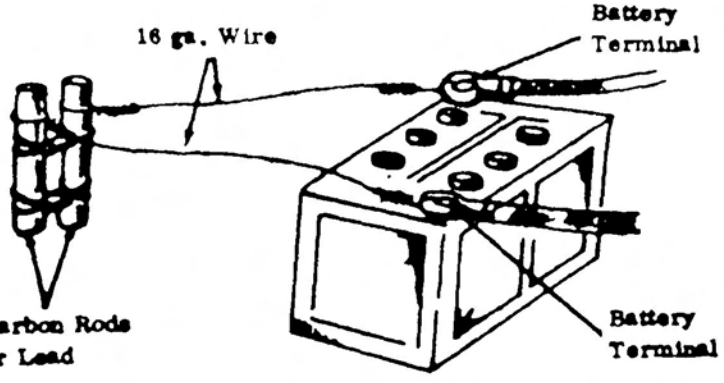


3. Strip about 4 inches of insulation from both ends of the 2 wires.

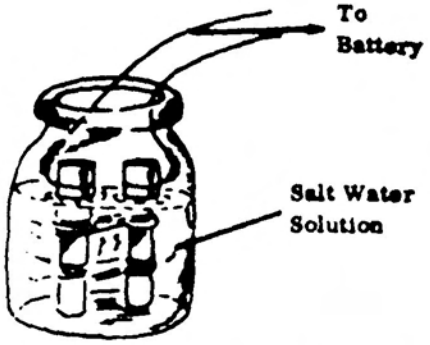
4. With knife and sticks shape 2 strips of wood 1 x 1/8 x 1-1/2. Tie the wood strips to the lead or carbon rods so that they are 1-1/2 inches apart.



5. Connect the rods to the battery in a motor vehicle with the insulated wire.



6. Submerge 4-1/2 in. of the rods into the salt water solution.



7. With gear in neutral position, start the vehicle engine. Depress the accelerator approximately 1/5 of its full travel.

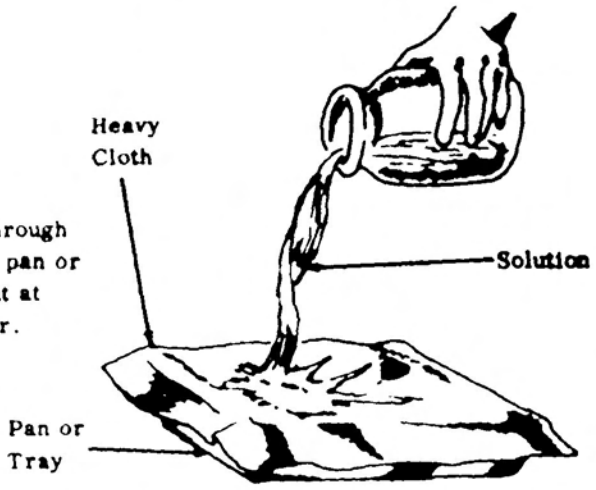
8. Run the engine with the accelerator in this position for 2 hours; then, shut it down 2 hours.

9. Repeat this cycle for a total of 64 hours while maintaining the level of the acid-salt water solution in the glass jar.

CAUTION: This arrangement employs voltages which may be dangerous to personnel. Do not touch bare wire leads while engine is running.

10. Shut off the engine. Remove the rods from the glass jar and disconnect wire leads from the battery.

11. Filter the solution through the heavy cloth into a flat pan or tray, leaving the sediment at the bottom of the glass jar.



12. Allow the water in the filtered solution to evaporate at room temperature (approx. 16 hours). The residue is approximately 60% or more sodium chlorate which is pure enough to be used as an explosive ingredient.

Section I
No. 24

MERCURY FULMINATE

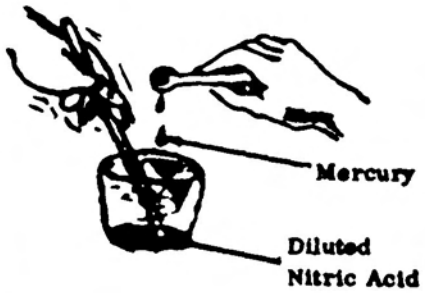
Mercury Fulminate is used as a primary explosive in the fabrication of detonators (Section VI, No. 13). It is to be used with a booster explosive such as picric acid (Section I, No. 21) or RDX (Section I, No. 15).

MATERIAL REQUIRED:	SOURCE:
Nitric Acid, 90% conc. (1.48 sp. gr.)	Field grade (Section I, No. 4) or industrial metal processors
Mercury	Thermometers, mercury switches, old radio tubes
Ethyl (grain) alcohol (90%)	
Filtering material	Paper towels
Teaspoon measure (1/4, 1/2, and 1 teaspoon capacity) - aluminum, stainless steel or wax-coated	
Heat source	
Clean wooden stick	
Clean water	
Glass containers	
Tape	
Syringe	

PROCEDURE:

1. Dilute 5 teaspoons of nitric acid with 2-1/2 teaspoons of clean water in a glass container by adding the acid to the water.

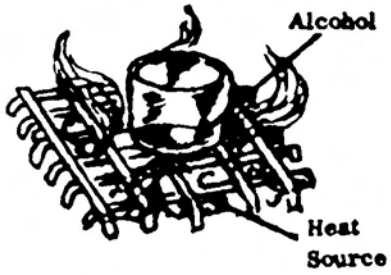
2. Dissolve 1/8 teaspoon of mercury in the diluted nitric acid. This will yield dark red fumes.



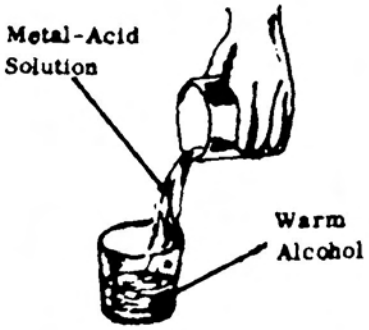
NOTE: It may be necessary to add water, one drop at a time, to the mercury-acid solution in order to start reaction.

CAUTION: Acid will burn skin and destroy clothing. If any is spilled, wash it away with a large quantity of water. Do not inhale fumes.

3. Warm 10 teaspoons of the alcohol in a container until the alcohol feels warm to the inside of the wrist.

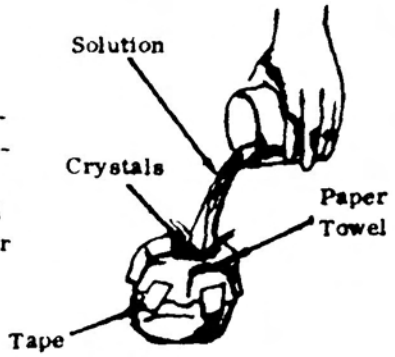


4. Pour the metal-acid solution into the warm alcohol. Reaction should start in less than 5 minutes. Dense white fumes will be given off during reaction. As time lapses, the fumes will become less dense. Allow 10 to 15 minutes to complete reaction. Fulminate will settle to bottom.

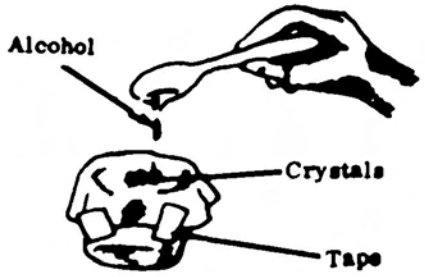


CAUTION: This reaction generates large quantities of toxic, flammable fumes. The process must be conducted outdoors or in a well ventilated area, away from sparks or open flames. Do not inhale fumes.

5. Filter the solution through a paper towel into a container. Crystals may stick to the side of the container. If so, tilt and squirt water down the sides of the container until all the material collects on the filter paper.



6. Wash the crystals with 6 teaspoons of ethyl alcohol.



7. Allow these mercury fulminate crystals to air dry.

CAUTION: Handle dry explosive with great care. Do not scrape or handle it roughly. Keep away from sparks or open flames. Store in cool, dry place.

Section I
No. 14

PREPARATION OF COPPER SULFATE (PENTAHYDRATE)

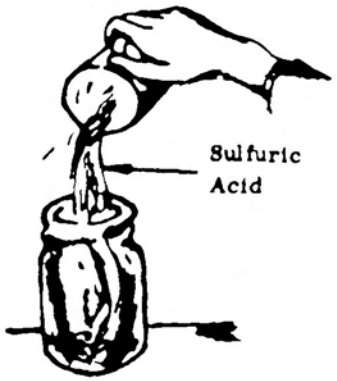
Copper sulfate is a required material for the preparation of TACC (Section I, No. 16).

MATERIAL REQUIRED:

Pieces of copper or copper wire
Dilute sulfuric acid (battery acid)
Potassium Nitrate (Section I, No. 2) or Nitric Acid, 90% conc. (1.48 sp. gr.) (Section I, No. 4)
Alcohol
Water
Two 1 pint jars or glasses, heat resistant
Paper towels
Pan
Wooden rod or stick
Improvised Scale (Section VII, No. 8)
Cup
Container
Heat source
Teaspoon

PROCEDURE:

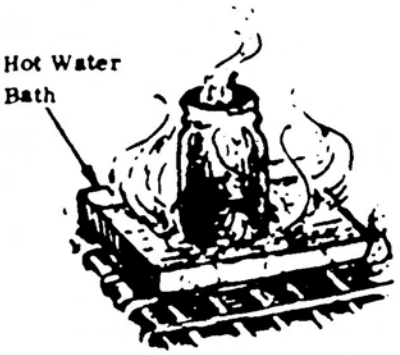
1. Place 10 grams of copper pieces into one of the pint jars. Add 1 cup (240 milliliters) of dilute sulfuric acid to the copper.



2. Add 12 grams of potassium nitrate or 1-1/2 teaspoons of nitric acid to the mixture.

NOTE: Nitric acid gives a product of greater purity.

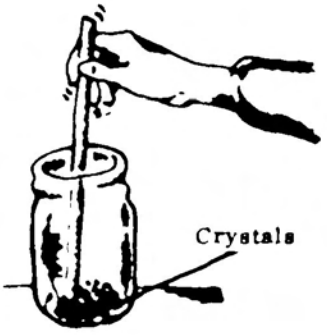
3. Heat the mixture in a pan of simmering hot water bath until the bubbling has ceased (approximately 2 hours). The mixture will turn to a blue color.



CAUTION: The above procedure will cause strong toxic fumes. Perform Step 3 in an open, well ventilated area.

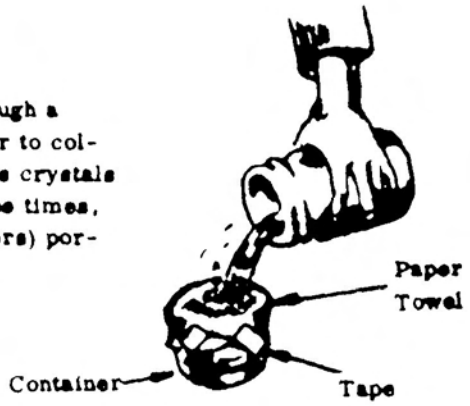
4. Pour the hot blue solution, but not the copper, into the other pint jar. Allow solution to cool at room temperature. Crystals will form at the bottom of the jar. Discard the unreacted copper pieces in the first jar.

5. Carefully pour away the liquid from the crystals. Crush crystals into a powder with wooden rod or stick.



6. Add 1 2 cup (120 milliliters) of alcohol to the powder while stirring.

7. Filter the solution through a paper towel into a container to collect the crystals. Wash the crystals left on the paper towel three times, using 1/2 cup (120 milliliters) portions of alcohol each time.



8. Air dry the copper sulfate crystals for 2 hours.

NOTE: Drying time can be reduced to 1/2 hour by use of hot, not boiling, water bath (see Step 3).

Section I
No. 18

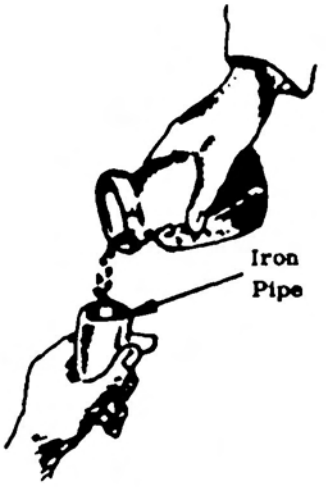
POTASSIUM OR SODIUM NITRITE AND LITHARGE (LEAD MONOXIDE)

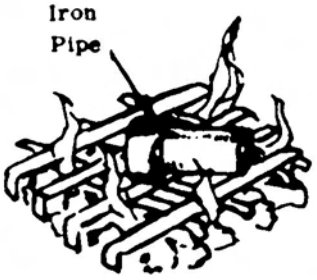
Potassium or sodium nitrite is needed to prepare DDNP (Section I, No. 19), and litharge is required for the preparation of lead picrate (Section I, No. 20).

MATERIAL REQUIRED:	SOURCE:
Lead metal (small pieces or chips)	Plumbing supply store
Potassium (or sodium) nitrate	Field grade (Section I, No. 2) or Drug Store
Methyl (wood) alcohol	
Iron pipe with end cap	
Iron rod or screwdriver	
Paper towels	
2 glass jars, wide mouth	
Metal pan	
Heat source (hot coals or blow torch)	
Improvised scale (Section VII, No. 8)	
Cup	
Water	
Pan	

PROCEDURE:

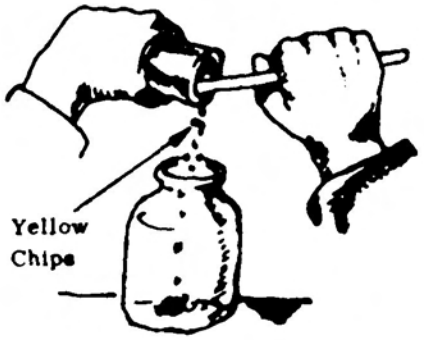
1. Mix 12 grams of lead and 4 grams of potassium or sodium nitrate in a jar. Place the mixture in the iron pipe.



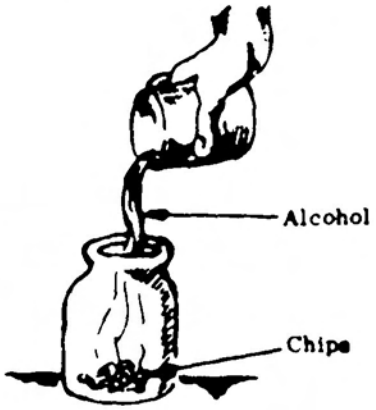


2. Heat iron pipe in a bed of hot coals or with blow torch for 30 minutes to 1 hour. (Mixture will change to a yellow color.)

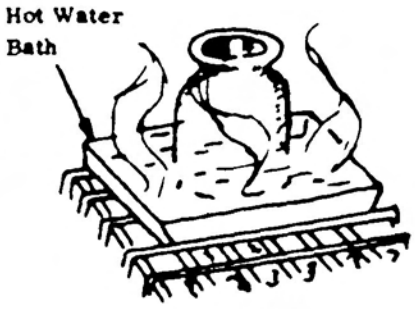
3. Remove the iron pipe from the heat source and allow to cool. Chip out the yellow material formed in the iron pipe and place the chips in the glass jar.



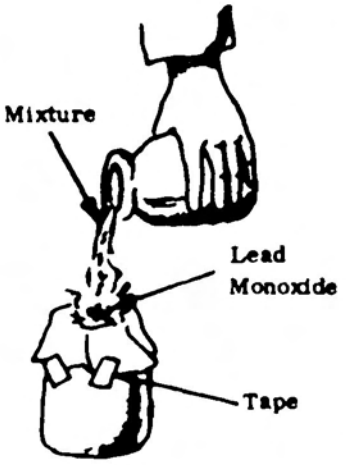
4. Add 1/2 cup (120 milliliters) of methyl alcohol to the chips.



5. Heat the glass jar containing the mixture in a hot water bath for approximately 2 minutes (heat until there is a noticeable reaction between chips and alcohol; solution will turn darker).



6. Filter the mixture through a paper towel into the other glass jar. The material left on the paper towel is lead monoxide.



7. Remove the lead monoxide and wash it twice through a paper towel using 1/2 cup (120 milliliters) of hot water each time. Air dry before using.

8. Place the jar with the liquid (from Step 6) in a hot water bath (as in Step 5) and heat until the alcohol has evaporated. The powder remaining in the jar after evaporation is potassium or sodium nitrite.

NOTE: Nitrite has a strong tendency to absorb water from the atmosphere and should be stored in a closed container.

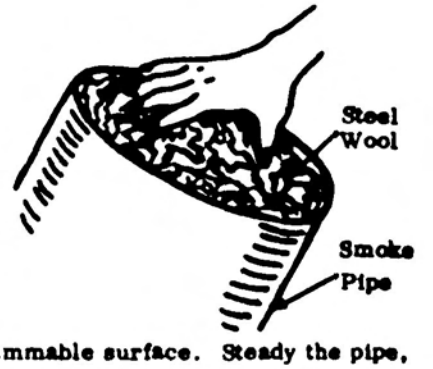
IMPROVISED IRON OXIDE

Iron Oxide can be made from steel wool. It is used in the preparation of Improvised Yellow Flare (Section V, No. 8), Improvised White Smoke Munition (Section V, No. 9) and Improvised Black Smoke Munition (Section V, No. 10).

MATERIAL REQUIRED:	SOURCE:
Steel wool (without soap), approx. 16 large pads	Hardware or general store
Smoke pipe, approximately 4 feet long x 12 inches in diameter, 1/16 inches thick	Hardware store
Vacuum cleaner	Hardware store
Electrical source (110 v., A. C.)	Modern commercial and domestic buildings
Window screen	
Newspaper	
2 containers	
Wooden blocks, if necessary	
Flame source (matches, lighter, etc.)	

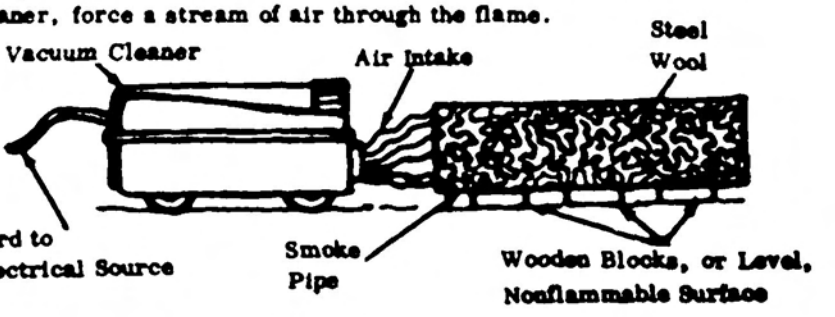
PROCEDURE:

1. Separate a handful of steel wool into a fluffy ball approximately 12 inches in diameter and place into one end of the smoke pipe.



2. Place the pipe on a level, nonflammable surface. Steady the pipe, using wooden blocks if necessary.

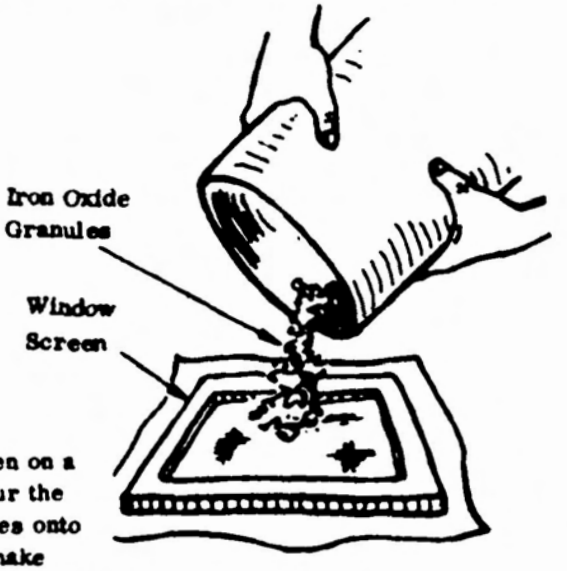
3. Ignite the steel wool with the flame source and, with the vacuum cleaner, force a stream of air through the flame.



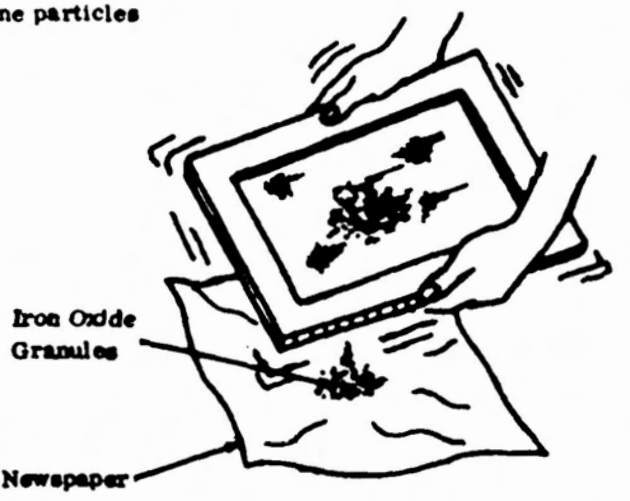
NOTE: The forced air provided by the vacuum cleaner aids in the burning of the steel wool. If the steel wool does not completely burn, more separation of the wool is needed.

4. When the steel wool has almost completely burned, add another handful of the fluffed steel wool (Step No. 1).

5. Continue adding to the flame a single handful of fluffed wool at a time until a sufficient amount of iron oxide granules have accumulated in the stove pipe.



6. Place a window screen on a sheet of newspaper. Pour the burned steel wool granules onto the window screen and shake screen until all the fine particles have passed through.



7. Discard those particles on the newspaper which are fibrous and unburned.

8. Save the particles which were too large to pass through the screen in one of the containers for future burning.

9. Store particles of iron oxide (left on newspaper) in another container until ready for use.

IMPROVISED SCALE

This scale provides a means of weighing propellant and other items when conventional scales or balances are not available.

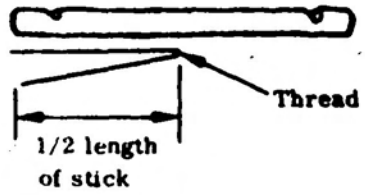
MATERIAL REQUIRED:

Pages from Improvised Munitions Handbook
Straight sticks about 1 foot (30 cm) long and 1/4 in. (5 mm) in diameter
Thread or fine string

PROCEDURE:

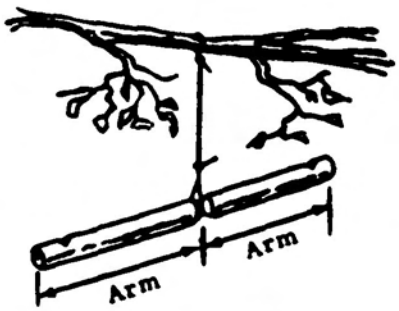
1. Make a notch about 1/2 in. (1 cm) from each end of stick. Be sure that the two notches are the same distance from the end of the stick.

2. Find the exact center of the stick by folding in half a piece of thread the same length as the stick and placing it alongside the stick as a ruler. Make a small notch at the center of the stick.



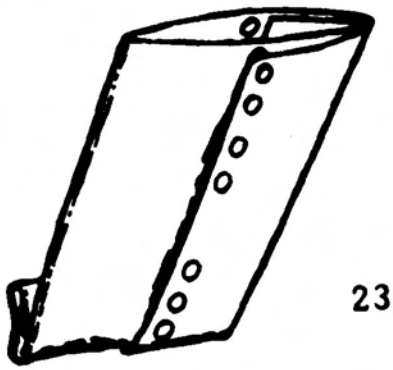
3. Tie a piece of thread around the notch. Suspend stick from branch, another stick wedged between rocks, or by any other means. Be sure stick is balanced and free to move.

NOTE: If stick is not balanced, shave or scrape a little off the heavy end until it does balance. Be sure the lengths of the arms are the same.

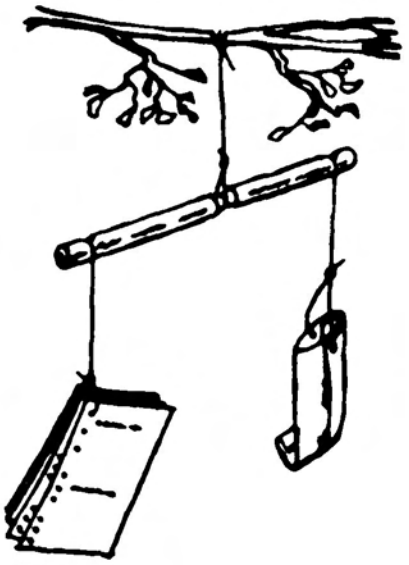


4. Make a container out of one piece of paper. This can be done by rolling the paper into a cylinder and folding up the bottom a few times.

5. Punch 2 holes at opposite sides of paper container. Suspend container from one side of stick.



6. Count out the number of handbook pages equal in weight to that of the quantity of material to be weighed. Each sheet of paper weighs about 1.3 grams (20 grains or .04 ounce). Suspend these sheets, plus one, to balance container on the other side of the scale.



7. Slowly add the material to be weighed to the container. When the stick is balanced, the desired amount of material is in the container.

8. If it is desired to weigh a quantity of material larger than that which would fit in the above container, make a container out of a larger paper or paper bag, and suspend from one side of the stick. Suspend handbook pages from the other side until the stick is balanced. Now place a number of sheets of handbook pages equal in weight to that of the desired amount of material to be weighed on one side, and fill the container with the material until the stick is balanced.

9. A similar method may be used to measure parts or percentage by weight. The weight units are unimportant. Suspend equal weight containers from each side of the stick. Bags, tin cans, etc. can be used. Place one material in one of the containers. Fill the other container with the other material until they balance. Empty and refill the number of times necessary to get the required parts by weight (e.g., 5 to 1 parts by weight would require 5 fillings of one can for one filling of the other).

Section VII
No. 13

IMPROVISED BATTERY (2 HOUR DURATION)

This battery should be used within 2 hours and should be securely wrapped. Three cells will detonate one blasting cap or one igniter. Five cells, connected in series, will detonate two of these devices and so on. Larger cells have a longer life and will yield more power.

If depolarizing materials such as potassium permanganate or manganese dioxide cannot be obtained, ten cells without depolarizer, arranged as described below, (Step 4) will detonate one blasting cap.

MATERIALS	COMMON SOURCE
Water	
Ammonium chloride (sal ammoniac) (solid or concentrated solution)	Medicines Soldering fluxes Fertilizers Ice melting chemicals for roads
Charcoal powder	
Copper or brass plate about 4 in. (10 cm) square and 1/16 in. (2 mm) thick	
Aluminum plate same size as copper or brass plate	
Wax and paper (or waxed paper)	Candles
Wire, string or tape	
Container for mixing	
Knife	
One of the following	
Potassium permanganate, solid	Disinfectants Deodorants
Manganese dioxide	Dead dry batteries

NOTE: If ammonium chloride solution is not concentrated (at least 45% by weight) boil off some of the water.

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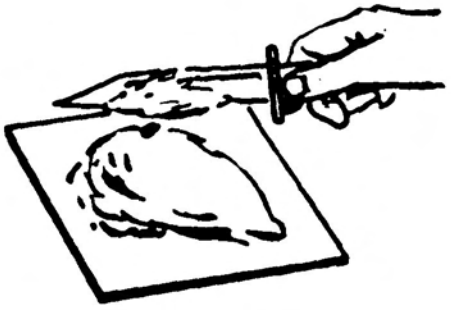
Container for mixing	
Knife	
One of the following	
Potassium permanganate, solid	Disinfectants Deodorants
Manganese dioxide	Dead dry batteries

NOTE. If ammonium chloride solution is not concentrated (at least 45% by weight) boil off some of the water.

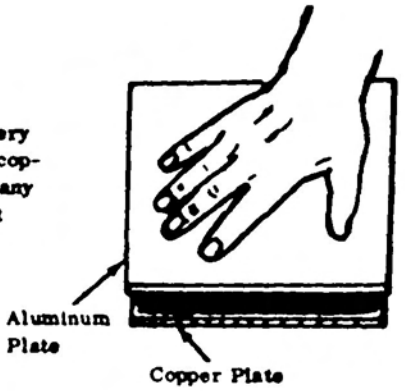
PROCEDURE:

1. Mix thoroughly (do not grind) approximately equal volumes of powdered charcoal, ammonium chloride and one of the following: potassium permanganate or manganese dioxide. Add water until a very thick paste is formed. If ammonium chloride is in solution form, it may not be necessary to add water.

2. Spread a layer of this mixture, about 1/8 in. (3 mm) thick, on a clean copper or brass plate. The layer must be thick enough to prevent a second plate from touching the copper plate when it is pressed on top.

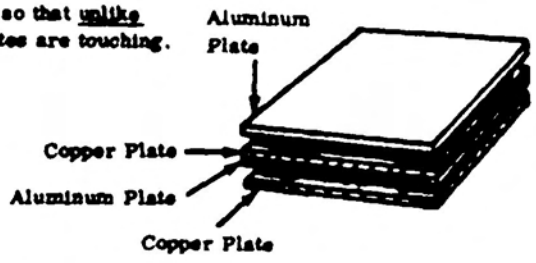


3. Press an aluminum plate very firmly upon the mixture on the copper plate. Remove completely any of the mixture that squeezes out between the plates. The plates must not touch.



4. If more than one cell is desired:

   a. Place one cell on top of the other so that unlike metal plates are touching.



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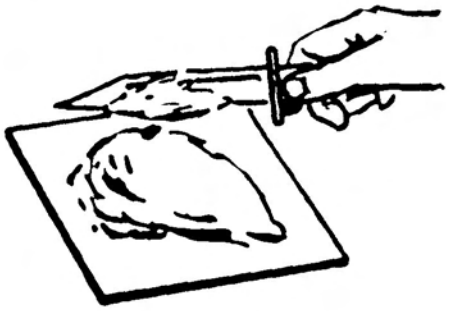

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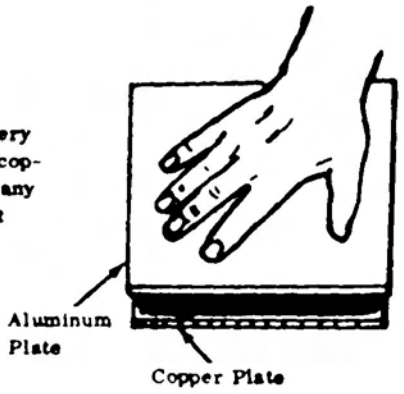

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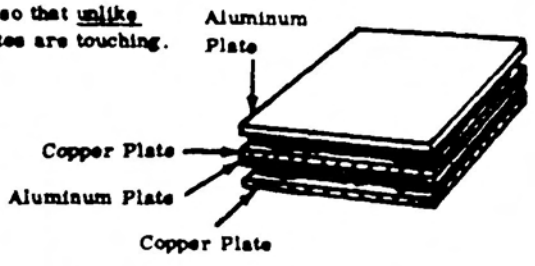
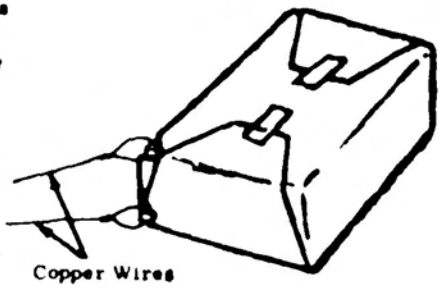


b. Wrap the combined cells in heavy waxed paper. The waxed paper can be made by rubbing candle wax over one side of a piece of paper. Secure the paper around the battery with string, wire or tape. Expose the top and bottom metal plates at one corner.



HOW TO USE

1. Scrape a few inches off each end of two wires with knife till metal is shiny.

2. Clean plates with knife until metal is shiny where connections are to be made.

3. Connect one wire from the explosive to a copper or brass plate and the other wire to an aluminum plate. The connection can be made by holding the wire against the plate. A permanent connection can be made by hooking the wire through holes in the exposed corners of the plates. The battery is now ready for use.

NOTE If battery begins to fail after a few firings, scrape the plates and wires where connections are made until metal is shiny.

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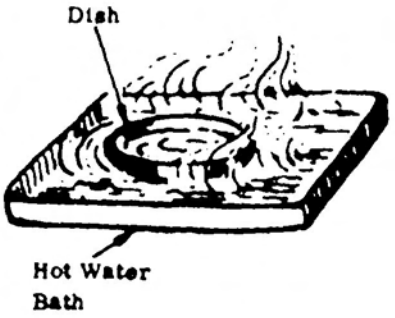
2. Add approximately 1/3 to 1/2 cup of alcohol (100 milliliters) to the aspirin paste; stir while pouring.

3. Filter the alcohol-aspirin solution through a paper towel into another glass container. Discard the solid left on the paper towel.

4. Pour the filtered solution into a ceramic or glass dish.

5. Evaporate the alcohol and water from the solution by placing the dish into a pan of hot water. White powder will remain in the dish after evaporation.



NOTE: Water in pan should be at hot bath temperature, not boiling, approximately 160° to 180° F. It should not burn the hands.