

METHODS OF LONG TERM UNDERGROUND STORAGE
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INDEX

Chapter 1.....	4
Above Ground	4
Chapter 2.....	5
Below Ground	5
A. Ammo Cans.....	5
B. Plastic Bags	6
C. PVC Pipe.....	6
Chapter 3.....	8

Methods_Of_Long_Term_Underground_Storage_2004.txt	
A. Cosmoline	8
B. Plastic Coatings.....	8
Chapter 4.....	12
A. Indicating and Non-indicating...	12
B. Vapor Phase Inhibitor	14
Chapter 5.....	16
Location of Burial Site, placement underground	16
Chapter 6.....	17
Marking the containers	17
Appendix	19
A. Ammo Cans	19
B. Cosmoline & Plastic Coatings ...	19
C. C-Rations.....	20
D. Desiccators	21
E. Fiberglass Cloth	22
F. Freon.....	22
G. Plastic Bags & Containers.....	23
H. Plastic Beads.....	23
I. Publications	23
J. PVC Pipe.....	24

PREFACE

The purpose of this book is to give the reader some basic ideas on how to prepare various materials (coins, firearms, etc.) for long term storage below ground. The reason for this book is, or should be, obvious. Namely the political and social climate in this country and the rest of the world. History has shown that during

major social or natural upheavals the people who survived were those who prepared for the worst. During these times the most valuable items were: Food, firearms, and a valuable medium of exchange. (i. e., gold, silver, precious gems, etc.) The authors considered this book just the first edition. We urge our readers to send us any criticism, comments, suggestions or different methods which they have tried and found successful, so that we may pass it on in the next edition. Some of the prices of the materials which we quote are based on the current costs in our area. (Eastern Washington state) They may vary according to location, inflation, shipping, etc., their main purpose is just to give the reader a rough idea on costs.

We would like to thank the following people for their assistance and advice:

Roger Cattow
Don Chumley
Ken Hankins
Harold Meyers

(3)
CHAPTER ONE

ABOVE GROUND

The long term storage of materials above the ground and indoors is relatively simple. The main concerns are spoilage (food) and corrosion (metals, except gold, which does not corrode or deteriorate). One of the handiest methods is the use of "Seal-N-Save" (Sears) or "Seal-A-Meal" (Montgomery Ward) type sealable plastic pouches. The basic units cost \$16.00 to \$19.00 and are a very good investment. The plastic bags come in 3 basic sizes, 8" by 6", 8" by 9" and 8" by 12". They are intended for food

freezing and cooking, but they have many other uses. Dried food can be stored indefinitely when protected from air. By using a moisture absorbent pack of silica gel they work well for storage of silver, ammunition, small handguns, etc., for long periods of time. Be sure to remove as much air as possible before sealing. There are a number of small sealable plastic buckets and square containers made for industrial use which also work very well for indoor storage of materials. The best of these have gaskets for a complete and long lasting seal.

There are a number of excellent books on long term storage of food above ground. One of the best of these is "Family Storage Plan" by Bob R. Zabriskie. This and other books are available from "Survival, Inc." (See appendix D) This book goes into fine detail on the storage of food and water and we highly recommend that you obtain it.

(4)

All of the methods described in the following chapters can be used above ground.

CHAPTER TWO

An excellent method for storing ammunition, handguns, coins, etc. is the use of G.I. ammo cans. To begin with, put the items in the can along with silica gel or V. P . I . and/or cosmoline as you prefer. Next, liberally coat the rubber seal around the edges of the can with Vaseline to keep the rubber from drying out. Close the can. Next, take a sheet of fiberglass cloth and wrap the can like you were wrapping a birthday present. Use a heavy thread and needle to sew the ends shut. Next, mix a small quantity of hardener (as per instructions on the can with some resin. Then coat one side of the can to seal it, and allow it to dry (cure) We recommend you do

it one side at a time for two reasons. First, it is easier to handle. Second, the resin generates a pretty fair amount of heat when curing and we would hate to be around if a can of sealed ammo happened to reach a critical temperature. Make Sure that the can is completely sealed, and it will last a long, long time. You may also seal them in plastic bags. (see next section 3)

(NOTE: The fiberglass system may also be used on wooden boxes with equal results.)

(5)

B.PLASTIC BAGS

The use of plastic bags is very simple and very effective. First,(assuming it is a firearm) take the stock or grips and anything using plastic as a component and put it in a separate plastic bag and seal it with plastic tape. (Or if the items are small enough, use a "Seal-A-Meal") Expel as much air as possible before sealing. If it is a small item (such as a handgun or coins) you can also use the "Seal-A-Meal" method. Next, place all of the metal parts in a plastic bag with a liberal (hate that word) amount of silica gel* (* best in a ventilated contained, rather than making direct contact with the metal.) Or, if you prefer, coat the metal with cosmoline using one of the methods described in Chapter 3, then place in the bag and seal the bag with plastic tape. Be sure to place styrofoam or something similar over the sights and all sharp points so they won't cut through the bag. Next, place both plastic bags in a third bag and seal with tape. Now, add as many other bags as you feel necessary to insure that it is completely protected. (Use at least three bags.)

The use of PVC pipe is more complicated and costly, but in the end, well worth the time and trouble. It is impervious to just about anything and will last long beyond your lifetime. The

biggest factor is cost . The cost of the pipe itself is not too bad, but the cost of the end caps normally used with PVC pipe is OUT OF SIGHT! (See appendix J.)

(6)

To save the "out of sight" cost of the PVC end caps, the best alternative is to use PVC or plexiglas sheets cut to size and glued to the ends of the pipes. However, you must be sure that the ends of the pipe are square. The best thing to use to insure this is a radial arm saw. Lacking this, the next best thing would be to make a miter box out of scrap lumber and cut it with a hand saw.

To begin with, PVC pipe comes in many sizes and strengths. For our purposes, probably, the best sizes would be 5" or 6" in either 63 pound or 100 pound strength. You can get it as small as 1 " or as large as 12". The small sizes would be useful mainly for coins, parts, etc., and the large sizes would hold a number of rifles, etc.

To prepare the pipe for use, first seal one end. Seal must be air tight. Next, drop in enough plastic (styrofoam) beads to cover the sealed end. Put a length of copper tubing down to the bottom of the pipe. Insert the item to be stored centering it in the pipe. Fill up all of the remaining air space with more plastic beads. Turn on the Freon can attached to the copper tubing. Slowly, (Be sure the can is upright so that Freon gas comes out rather than liquid.) Hold a match at the opening of the pipe. When the match goes out, the pipe is full of Freon. (Lack of oxygen makes it go out.) Then, remove the tubing (carefully) and immediately cap and seal the open end of the pipe. It would be a good idea to insert a packet of silica gel inside the pipe before sealing to take care of any residual moisture that might be present.

(7)

CHAPTER THREE

COSMOLINE

Cosmoline is very resistant to moisture, chemical, salt water and small amounts of abrasion. It is non-drying and will prevent rust for long periods of time. It's main use for our purposes would be long term storage of firearms. However, one thing to note carefully. DO NOT apply it to stocks, grips, scopes or anything made out of plastic. Also, when removing cosmoline from a firearm (use a petroleum solvent) be sure to thoroughly clean ALL surfaces, especially the bore.

There are two main methods of applying cosmoline. The first method is by dipping. The firearms should be clean and dry at the time of application. The cosmoline should be melted to a temperature of from 180°F to 200°F and the firearm should be allowed to remain in the solution until the temperature of the metal is about the same as the cosmoline. The cosmoline will be thinner and bond to the metal better. This method takes larger amounts of cosmoline and special equipment, although in the end it uses less cosmoline.

The second and easiest method is by brushing or swabbing. Again, the firearms must be clean and dry. First heat the cosmoline until it is about 140°F to 160°F. (Until it is a liquid, but not watery) Then, brush or swab it on, maintaining as even a coating as possible. If you have use for only a small amount of cosmoline, Vaseline is the same thing only more purified. It costs more, but is

(8)

readily available. If you want a slightly stiffer material, melt Vaseline and paraffin and mix thoroughly. This mixture can then be brushed or swabbed onto the item being stored.

Basic Data: - Melting point 160°F
Flash point 400°F

B. PLASTIC COATINGS

We have done some investigation of plastic coatings for long term protection. There are three criteria for a plastic coating to be useful as a corrosion preventative on parts and equipment. We should point out at this time that a coating of this type is not for use on complete firearms but only on parts or tools being stored for long periods of time. The first criteria is a coating must meet is to be moistureproof. Plastics even in rather thin layers meet this requirement easily. The second one for our purposes is that it be easy to apply and third, that it can be easily and completely removed. We have found reference to three types of commercial plastics that will meet these requirements. Cope Plastics, 1111 W. Selmar, Godfrey, Ill. 62035, makes compounds called Plastisols, which are a mixture of finely ground polyvinyl chloride resin and plasticizer. They are available in a wide range of colors and degrees of flexibility. All that is required for their use is an oven. (A kitchen oven will work) The item to be coated is heated to 300°F. *Dipped in Plastisol for three to five minutes, then removed slowly. The plastic must the be fused by heating again at 350F*

(9)

for five to fifteen minutes, then emersed in cool water. It can be removed by cutting through the coating and peeling it off.

* NOTE: for this reason we DO NOT recommend it's use on springs as they may lose their temper and become brittle.

A second type of commercial plastic coating is made by Dipseal Plastics, 2311 23rd Ave., Rockford, Ill. 61101. Their product comes

in large sheets which are heated to a molten state. The item to be coated is dipped in and then removed and allowed to cool. This is the type of coating usually found on saw blades and drill bits to protect the cutting edge. This coating is easier to apply than the Plastisol type because the item to be coated does not have to be heated. It is also as easy to remove as Plastisol. One problem we had was in finding sources of small quantities of this material. Dipseal Plastics will not sell in small quantities and a supplier in our area will only sell it in 25 pound lots at \$1.25 per pound

.

The third commercial plastic is called Plas-ti-Dip, made by Plasti-Dip International, 1458 West Country Road C, St. Paul, Minn. 55113. This product was designed for coating tool handles and is very easy to use. PlastiDip does not require heat for curing, it needs only be air dried. The part or tool should be cleaned, then immersed slowly (1 inch every five seconds) into the plastic and then withdrawn slowly and allowed to air dry. If a second coat is required, the first coat should be allowed to dry for at least 25 minutes

(10)

before the second coat is applied. It can be used on wood, however it would not be a good idea to use it on anything with a finish or checkering as it may discolor the wood and be hard to remove from the checkering.

A homemade plastic coating is probably the easiest to use. Acrylic plastic such as Plexiglas or styrene plastic from plastic models can be dissolved in acetone to make a useable dipping plastic. A small scrap of Plexiglas can usually be had from a local glass company and many drug stores carry acetone. It only takes about a one inch square piece of quarter inch Plexiglas to a half pint on acetone to make plastic coating material. It takes several

days for the Plexiglas to dissolve completely and it must be kept in a closed glass or metal container. The resulting liquid should be about the consistency of syrup. If it is too thick add more acetone, if it is too thin add more Plexiglas or allow some of the acetone to evaporate. The styrene plastic can be from the parts tree of a model kit and is made up same way. To use this type of plastic, the item is dipped into the mixture and then the acetone is allowed to evaporate, leaving the plastic coating. These types of coating are more brittle than the commercial ones and will require more care in handling, but it still meets the criteria stated above.

The use of a plastic coating to protect small parts and tools has some advantages. The rust proof coating that plastics provide could well be used not only for long term storage, but also for storage between uses in your

(11) shop or gun room . Unlike oils, which may have to be removed before use, the plastic does not require repeated wiping or solvents, it just peels off and in some cases can be reused .

DESICCANTS

There are two good methods to preserve metals in long term storage. The usual method is to coat the metal in a petroleum jelly or cosmoline. This method has proven itself for many years but requires much labor and solvents to remove. A second method, which will work equally well and requires no labor to apply or remove is the use of a desiccant in a sealed storage container.

A desiccant is a substance which absorbs water from the air. There are many chemical compounds which will act as a desiccant. However, many such as barium perchlorate or phosphorus pentoxide can form corrosive material as they absorb moisture. Two very good

desiccants which are readily available and excellent for long term use are silica gel and Drierite. Drierite is a product of the W. A. Hammond Drierite Company and is anhydrous calcium sulfate. Silica gel is manufactured by many companies and is a precipitated silica acid, but is quite inert to any chemical reaction.

Both of these desiccants are available in two forms, a regular or an indicating form. The indicating forms have a small amount of material which changes from blue, when dry and ready for use to pink when their

(12) drying capacity is exhausted. Although the indicating forms are more expensive, the knowledge that they are ready for use is well worth the extra cost.

Silica gel and Drierite are available from most scientific supply companies, generally in one or five pound lots. A list of some of these are in the appendix (D). The cost is continually changing but at the time of this writing, plain Drierite was listed at \$3.70 per pound. or \$13.70 per five pounds. The indicating type costs about double that of the plain. The indicating silica gel listed at \$8.66 per pound or \$30.25 for five lbs. Only the indicating silica gel is listed here because for static drying the manufacturers recommend only an indicating type.

Both of the desiccants are also available in prefabricated containers. Generally they are a round tin about 2 3/4 inches in diameter and 1/2 inch thick. However, we have found a rectangular silica gel containers 17/32 inches by 2 1/16 inches by 4 inches. These are loaded with indicating silica gel or indicating Drierite. The silica gel sells for about \$3.50 each and the Drierite ones for about \$2.00 at this time. Again, the cost is continually changing. These ready-made air dryers contain about an ounce of desiccant and are good for five cubic feet of space. Silica gel packets can

be found in Shotgun News (See appendix J) at a reasonable price. These have silica gel in porous paper. The small packets are good for approximately 2500 cubic inches and cost \$2.00 for 10. A large packet contains 12 ounces for \$4.75 plus postage and it is good

(13) for rather large spaces. Some camera stores handle small packets of silica gel used for protecting cameras and film.

Desiccants in the bulk form can easily be made into forms similar to the premade air dryers. A simple but effective packet can be made from porous cloth such as burlap or "Handi-Wipes." Form an envelope by sewing or stapling, add an ounce of desiccant and close off the end. An air dryer can also be made by using a small metal can such as a band-aid can and punching or drilling a lot of small holes in it. The holes must be large enough to allow maximum air flow, but smaller than the grain size of the desiccant. Then fill the can with desiccant and close. The can could be permanently closed by soldering, or you could use plastic tape. One pound of silica gel or Drierite will make ten to twenty air dryers. At this point, it should be mentioned that although Drierite is a good Desiccant and generally costs less than silica gel, with rough handling such as when transporting the sealed container, some of it could powder and coat the contents of the container it is to dry. With careful packing and handling, this will be avoided .

V.P.I.--VAPOR PHASE INHIBITOR

Another method which is not a desiccant but has a similar effect can be used to protect metal in a sealed container. This is a white crystalline powder which fills the container with vapor (displacing the air) rather than removing it. One of the trade names is "VaPro-Tex". (See appendix D) The protection

(14) lasts as long as the articles remain in the vapor. Also because it

Methods_Of_Long_Term_Underground_Storage_2004.txt

is not a desiccant it will not dry out wooden parts. It can also be used with oil type preservatives. There is a possibility that this method may cause some softening of some wood finishes or may cause minor discoloration of some plastics and wood. However, this is uncommon and is more likely to occur when the crystals are in direct contact with the items. Va-Pro-Tex is easy to use and works best in air tight containers. The easiest method is to sprinkle it in loose form into container. It can also be placed in a small pan within the container or even wrapped in a single thickness of loosely woven cloth or facial tissue, then placed in the container. The quantity to be used depends on the container size. A half teaspoon per cubic foot should provide complete protection. This method can be used for long periods of storage because once the container is sealed the vapors remain to give protection until it is opened. When the items are removed a quick cleaning to remove any Va-Pro-Tex in direct contact with the metal, especially the bore of a firearm, and it is ready to use. (NOTE: Avoid breathing the dust or vapors from V.P.I.) A Vapor Phase Inhibitor is also available in paper form. (See appendix D) The suppliers of this type of inhibitor give the life expectancy of the protection it provides at approximately seven years in a sealed plastic container or aluminum foil. Because of the limited life expectancy we do not recommend it for below ground storage. However, it could be put to good use in your shop or gun room to protect parts, tools and equipment in limited storage. A good use would be to wrap a mold block in the paper,

(15) then seal with aluminum foil or in a plastic bag. After the mold is used it can be re-wrapped for further protection. A small piece can also be placed in the box used to store reloading dies and provide protection between uses. This type of paper is not recommended for magnesium, cadmium, zinc, copper or thiokol rubber.

The long term storage of firearms and accessories would be

useless if when removed from their container you find nothing but rust. The proper use of a desiccator, cosmoline or V. P. I. will prevent this and render the stored item useful even after many years.

CHAPTER FIVE

LOCATION OF BURIAL SITE, PLACEMENT OF CONTAINER

If you are storing food for a long term for emergency use during some type of calamity, your house would serve as a good location. However, if you are storing firearms or the like until the "Crunch" comes, your house or yard is probably the worst possible location. (Unless you own a large number of acres.) With today's technology (i.e., metal detectors) any place you bury or store them is going to be easy to locate. A house or yard can be scanned in pretty short order. Snoopy neighbors are also a hazard. The best location would be somewhere relatively remote. There are several things to keep in mind about picking a location. Be sure as you can that it is not going to be the location of a development of some kind or in the way of a highway construction project. Also be sure that you have some type of permanent, natural reference

(16) points which can be used to locate the site at some point in the future when your memory of it's location can be somewhat hazy. Bury it DEEP. Four feet or more is best. (be sure the area is not prone to floods or erosion) To confuse possible searchers (other than yourself) it is best to scatter tin cans and the like a foot or two from the surface to make it appear as though the area was used as a dump of some sort.

Another good method is to bury the item directly under a fence post (or fence posts). However, DO NOT depend on the fence post as a permanent landmark. Use some other features in the area as

reference points. Try to leave the area looking the same as it was before you buried the items. If there is thick sod covering the area, cut out a section and replace it in as natural a state as possible. It is best to bury long, narrow objects (i. e., PVC pipe) end up. The advantage to burying an object end-up is that it reduces the "target" profile and makes it more difficult for someone using a metal detector. By the same token it makes it more difficult for you to recover the object, which makes it vital that you triangulate the location.

CHAPTER SIX

MARKING THE CONTAINERS

If you are burying more than one item in an area, it is best to put some outside identification on the container so you will know for sure what is inside. The best method is to obtain some clear plastic sheets used for

(17) covering cards, etc., for protection while carrying in your billfold. These can be obtained at most stationery stores. They have an adhesive on one side and usually come in letter size sheets. Type or write the description of the item in the container on a small card and seal between two pieces of plastic and trim off the excess, being sure to leave enough around the edges to insure a perfect

A second method of sealing a I. D. card in plastic is to use a small, trimmed down "Seal-A-Meal" type bag with the card inside. Whichever method you choose, tape the card to the container with two separate pieces of plastic tape passed completely around the container so that it will not come loose while you are burying it.

(18) APPENDIX

A. AMMO CANS

1. Big Tex Army-Navy Store
215 W . Jefferson
Dallas, Texas 75208
2. B.W. Trading Co.
Box 692-1016
Newark, Ohio 43055
3. Sherwood Dist., Inc.
18714 Parthenia St.
Northridge, CA 91324
4. Southwestern Arms Co., Inc.
Route 28, Box 84A
Milford, New York 13807
5. Probably the easiest source for ammo cans would be surplus stores, second-hand stores, flea markets and gun shows.

B. COSMOLINE & PLASTIC COATINGS

1. Brookstone Company (Plasti-Dip)
Brookstone Bldg.
Peterborough, New Hampshire, 03458
2. B.W. Trading Co. (Cosmoline)
Box 692--1016
Newark, Ohio 43055

(19) Appendix Continued

Methods_Of_Long_Term_Underground_Storage_2004.txt

3. Southwestern Arms Co., Inc. (Cosmoline)
Route 28, Box 84A
Milford, New York 13807
4. Gene Lightsey (Cosmoline)
559 Park Terrace
Birmingham, Alabama 35226
1. Army and Navy Sales Co.
200 Ashford Street
Brooklyn, New York 11207
2. Morris Lawing
1020 Central Ave.
Charlotte, No. Carolina 28204
3. Pat's Gun Shop
1407 Woodlawn
Columbia, So. Carolina 29209
4. Rocket Surplus Sales
2229 Vandalia Street
Route 159 North
Collinsville, Ill 62234
5. Sherwood Distributors
18714 Parthenia Street
Northridge, CA 91324

(20) Appendix Continued

D . DESICCATORS

1. Fisher Scientific Offices in: (US) Atlanta, Boston,

Methods_Of_Long_Term_Underground_Storage_2004.txt

Chicago, Cincinnati, Cleveland, Detroit, Houston,
Philadelphia, Pittsburgh, Raleigh, Rochester, San Francisco,
St. Louis, Springfield, and Washington, D.C. (Canada:)
Edmonton, Halifax, Montreal, Toronto, Vancouver.

2. Hydrosorbent Co.

P.O. Box 675
Rye, New York 10580

3. Key Products (Va-Pro-Tex)

P. O. Box 601
LaCanada, California 91011

4. Sargent-Welch

7300 No. Linder Ave.
Skokie, Illinois 60076

5. Survival, Inc.

P. O. Box 2246
Culver City, California 90230

6. Arthur H. Thomas Co.

P. O. Box 779
Philadelphia, Pennsylvania, 19105

7. VWR Scientific

P. O. Box 3200
Rincon Annex
San Francisco, California 94119

(21) Appendix Continued

8. Any chemical supply company in your area.

E. FIBERGLASS CLOTH

These materials are available at most marine supply stores.

1. Cloth: 12" wide is 28¢ per foot
50" wide is 50¢ per foot

2. Resin: \$2.20 per pint
\$4.20 per quart
\$16.00 per gallon

3. Hardener: .15¢ per pint
.30¢ per quart
\$1.00 per gallon

PRICES ARE SUBJECT TO VARIATION

F. FREON

1. Wescor, Inc.
459 So. Main Street (12 Logan Utah 84321
(12 oz. spray can with tubing, Cat. #OM-200, approx.
\$5.00 per can Trade Name: "Blow-Clean")

2. At most auto supply stores.
Auto air conditioner recharge kit with check valve and short hose with coupling: \$6.00 to \$8.00, replacement cans: \$1.50 to \$2.00.

(22)

Appendix Continued

G. PLASTIC BAGS & CONTAINERS

These are easily obtainable at all grocery stores. We recommend the heavy duty "Yard" type bags such as "Glad" or similar. The plastic containers (rigid plastic, sealable lid type) are usually available at large hardware type stores.

H. PLASTIC (Styrofoam) BEADS

1. Sears

Bean Bag Refills
Expanded Polystyrene Beads
2 1/2 pounds at \$4.99

2. Wards

Bean Bag Refills
Polystyrene "Beads"
1/2 pounds at \$4.99

3. At almost any large furniture store

PUBLICATIONS We highly recommend the following publications as good sources for various surplus materials and in the case of Gun Week, darn good reading.

1. Gun Week

\$6.00 per year
P. O. Box 150 (52 issues)
Sidney, Ohio 45365

(23)

Appendix Continued

2. Shotgun News

P.O. Box 669
\$7.50 per year (24 issues)

Methods_Of_Long_Term_Underground_Storage_2004.txt
Hastings, Nebraska 68901

J. PVC PIPE

This is available at most any irrigation supply company or at some large plumbing supply houses.

The 63 pound pipe is 26¢ to 89¢ per foot from 4" to 8" diameters. The 100 pound pipe is 38¢ to \$1.36 per foot from 4" to 8" diameters. The cost of the end caps is OUT OF SIGHT!

(24)