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**TOXIC HAZARDS ASSOCIATED
WITH PYROTECHNIC ITEMS**

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**PUBLISHED BY DIRECTION OF
THE CHIEF OF THE BUREAU OF NAVAL WEAPONS**

NAVWEPS OP 2793

**TOXIC HAZARDS ASSOCIATED
WITH PYROTECHNIC ITEMS**

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TOXIC HAZARDS ASSOCIATED WITH PYROTECHNIC ITEMS

INTRODUCTION

This publication presents a compilation of the toxicity characteristics of all pyrotechnic compositions in Fleet use. Also presented are those compositions under development by the Department of Defense for Naval use. The publication provides data concerning the degree of injury imposed when Naval personnel are exposed to toxic chemical ingredients, hazardous residues, and resultant products from burning pyrotechnic compositions.

The first phase of this program is concerned with the tabulation of the toxic characteristics of all chemical ingredients used in Navy compositions. In this work, standard texts, reports and any source of reliable data are used to gather the required information. The second phase of the study presents, for each pyrotechnic item, an estimation of the possible toxic effects from the unburned composition and from the products or residues of the pyrotechnic reaction.

DEFINITION OF TERMS

The toxicity hazard for any material is dependent on two factors, namely, (1) the basic toxicity of the material, and (2) the manner in which it is used or handled, or in other words, the exposure. The "toxicity"

of a substance describes or defines the ability of that substance to cause damage to the human body. This always involves the difficult problem of determining the degree of physiological impairment produced by the material. Considering the facts that (1) the physiological response may vary significantly, and (2) that toxicity ratings are usually derived from laboratory animals, the lack of a precise, quantitative method for defining the toxicity of a material is not surprising.

In compiling toxicity data on pyrotechnic materials, the system of toxicant classification used in "Dangerous Properties of Industrial Materials," by N. Irving Sax has been adopted. In this text, the following terms are defined.

ACUTE. Exposure of short duration; as applied to materials which are inhaled or absorbed through the skin, it refers to a single exposure lasting seconds, or hours; as applied to materials which are ingested, it refers generally to a single quantity or dose.

CHRONIC. In contrast to acute; exposures of long duration; for inhalation or absorption through the skin, it refers to prolonged or repeated exposure measured in days,

months or years; for ingested material, it refers to repeated doses over a period of days, months or years.

LOCAL. Refers to the site of action of an agent and means that the action takes place on the skin, mucous membranes of the eyes, nose, mouth, throat, or anywhere along the respiratory or gastrointestinal system. Absorption may or may not occur.

SYSTEMIC. Refers to a site of action other than the point of contact and presupposes that absorption has occurred. It is possible, however, for a toxic agent to produce its effects through "local" action and at the same time, through "systemic" action upon the area of original contact.

ABSORPTION. Implies that a material has entered into the blood stream and is thus distributed throughout the body.

GENERAL

The toxicity of a given material, as shown in Table 1, is considered according to its local or systemic effect in acute or chronic exposure. Under each type of exposure, columns are provided to indicate the principal modes through which the agent acts. The numbers in the table indicate the severity of the toxic effect. Zero indicates that the material causes no harm under any condition of use or may cause harm only under the most unusual conditions or by overwhelming dosage. The number, 1, indicates slight toxicity such that any effects are temporary and will disappear following termination of exposure, with or without medical treatment. A rating of 2 indicates moderate toxicity and is applied to those sub-

stances which may produce irreversible, as well as reversible, changes in the human body. These effects are not of such severity as to threaten life or produce serious permanent physical impairment. A rating of 3 indicates severe toxicity and is applied to those materials which threaten life or cause serious permanent physical impairment or disfigurement. A blank space in the table indicates that the toxic characteristics of the materials are unknown or not available. The solubility column indicates the water solubility of the material, "S" meaning moderately soluble to quite soluble and "i" meaning not soluble to an appreciable extent. "R" indicates that the material reacts with water.

In this OP, the composition for each pyrotechnic item is listed in percent or in parts by weight and an estimate of the toxic hazard is presented. This estimate is given for each ingredient in the composition on the basis of the amount present and the basic toxicity of the ingredient. It is impossible to foresee what the exposure may be in the event of breakage or spillage of the pyrotechnic composition. The estimate of toxic hazard therefore must be conditioned by the assumption that a maximum "normal" exposure may occur, and that "abnormal" exposures of the type resulting from deliberate or accidental ingestion of large quantities are excluded.

Information on the hazards which may exist from the toxic effects of the products of combustion is also present for each composition. In this case, the nature and relative amount of products or residues are estimated from the chemistry of the combustion reactions. The amounts of a particular product may differ

with different signals due to different proportions of the ingredient in the composition. For this reason, the estimate of toxic hazard for a particular product may vary with the initial concentration of the ingredient giving rise to the product. The scope of the present program did not permit experimental verification of these products and in some cases, particularly with the smokes, there may be a variety of dye decomposition products which cannot be readily identified. However, it should be assumed that any concentration of material in the air sufficient to produce a smoke will produce, at the very least, some undesirable physiological effects on the respiratory system and exposure should be minimized as far as possible.

The notes on disposal of damaged items or remains from burned items are intended to point out the hazards which may exist from handling highly toxic, corrosive, or spontaneously flammable materials. It must be remembered, however, that pyrotechnic compositions themselves may be explosive under some conditions and that many items are assembled with primers or other explosive components. Consequently, the disposal procedures prescribed in OP 5 and OP 2213 must be observed. These instructions constitute the normal routine procedures for disposal of pyrotechnic items.

ANIMAL TESTS

In order to obtain information on the toxicological characteristics of combustion products from pyrotechnic compositions, a program of animal tests was initiated with the Army Chemical Warfare Laboratories at the Army Chemical Center, Maryland. The results of this work were presented in CWL Technical Memorandum

26 - 12 May 1960. Some of the conclusions from these tests are discussed herein.

Rats, guinea pigs, and mice were given single one-hour exposure to various concentrations of combustion products from smokes and flares. The compositions used in the animal tests are listed in Table 2. The animals were observed for toxic signs, weight changes, and mortality during a seven-day post exposure period. Surviving animals were sacrificed after three to four weeks for pathological examination. During the exposure, the air in the chambers was analyzed for particulate matter, carbon dioxide, carbon monoxide, and oxygen.

Results from the animal exposure tests indicate that at the minimum exposure, i.e., about 100 grams in a 20,000-liter chamber, the most toxic were the red phosphorus composition and the Navy Blue Light. Among the smokes, the Yellow Smoke caused the greatest mortality and the severest toxic symptoms and should be considered the most harmful. Since the composition of the combustion products is not completely known and the physiological effects produced may be due to several individual agents acting simultaneously or to unsuspected synergistic phenomena, it is difficult to define the toxicity of these systems in a quantitative manner.

Some estimate of the possible toxic effects may be had through the following considerations. If it is assumed that the 100-gram charge in the 20,000-liter chamber results in 50 percent mortality in the guinea pigs, it might be assumed that the lethal amount of toxic agent was approximately in the range of 50- to 500-mg/kg. Using a figure of

100 mg/kg, the LD₅₀ for a 170-pound man would be 7.7 grams. If a 100-gram charge burning in a 10-foot x 20-foot x 10-foot room resulted in the uniform dispersion of 50 grams of the toxic materials and if the breathing rate is 0.5-liter per second, it would require at least 4.8 hours to receive the LD₅₀. If 500 grams were

burned in the room, with the same assumptions, the LD₅₀ might be received in about one hour. Of course, under actual conditions of exposure combative actions would usually be taken to minimize the extent of exposure and adverse physiological effects could be prevented.

Table 1
LIST OF MATERIALS

Material	Solubility	Acute Local				Acute Systemic			Chronic Local				Chronic Systemic		
		Irritant	Ingestion	Inhalation	Allergen	Ingestion	Inhalation	Allergen	Irritant	Ingestion	Inhalation	Allergen	Ingestion	Inhalation	Allergen
Aerosol, OS	S														
Alizarin green															
Aluminum powder	i	0	0	0	0	0	0	0		1			0	0	0
Aluminum bronze	i														
Ammonium chloride	S	1	1	1					1				1		
Ammonium nitrate	S					2	2						2	2	
Ammonium perchlorate	S	2	2	2		2							2		
Anthracene	i	1	1		1				3			1			
Anthraquinone 1, 4-di-p-toluidine															
Antimony pentasulfide	i	1	3	1		3	3		2				3	3	
Arsenic trisulfide	i	2	3		2	3	3		2				3	3	
Asbestos shorts	i	1		1		0	0	0			3				
Asphaltum	i	2							2						
Auramine hydrochloride	S	2	2	2	1	2	2		2	2	2	1	2	2	
Acetylene							2						1		
Auramine O															
Barium chlorate	S	1	1	1		2	2		1				2	1	
Barium chromate	i														
Barium nitrate	S	1	1	1		2	2		1				2	2	
Barium peroxide	i	1	1	1	1	1	1		1	1	1		2	2	
Benanthrone	i														

(A mixture - see charcoal, sulfur, potassium nitrate, or sodium nitrate)

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Table 1 (Cont'd)

Material	Solubility	Acute Local				Acute Systemic			Chronic Local				Chronic Systemic		
		Irritant	Ingestion	Inhalation	Allergen	Ingestion	Inhalation	Allergen	Irritant	Ingestion	Inhalation	Allergen	Ingestion	Inhalation	Allergen
Boron	i		2	2									2	2	
Calcium carbide	R (See acetylene)														
Calcium chlorate	S	1	1	1		2			1						
Calcium phosphide	R	1	1	1					1						
		(Release phosphine on contact with water-see phosphine)													
Calcium silicide	i	(Believed to be non-toxic)													
Calcium stearate	i														
Castor oil	i	1			1	2						1			
Cellulose nitrate camphor															
Charcoal	i	0	0	0						1			0	0	
Copper ammonium sulfate	S	1	1	1	1	2	2					1	1	1	
Copper powder	i	1	1	1	1	2	2					1	2	2	
Copper silicate															
Cupric oxide	i	1	1	1		2	2						2	2	
Cuprous chloride	i	1	1	1	1	2	2					1	1	1	
Crysoidin Y	S	1	1	1		1	1		1	1	1		2	2	
Cycle Red															
Dextrin	S	0	0			0			0	0			0		
Dye, O.i Scarlet 60															
Dye, Yellow, di benz (a, h) Pyrene 7, 14 dione		1	1	1	1	1	1	1	1	1	1				
Egyptian lacquer	i														
Fire Orange smoke dye															
Flaming red															
Graphite	i				1							1			

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Table 1 (Cont'd)

Material	Solubility	Acute Local				Acute Systemic				Chronic Local			Chronic Systemic		
		Irritant	Ingestion	Inhalation	Allergen	Ingestion	Inhalation	Allergen	Irritant	Ingestion	Inhalation	Allergen	Ingestion	Inhalation	Allergen
Guanidine nitrate	S					2	2						2	2	
Hexachlorobenzene	i					3	3						3	3	
Hexachloroethane	i	2	2			2							2	2	
HV Orange															
HV Orange B															
Indigo	i														
Iron oxide, Fe ₂ O ₃	i														
Kel-F-Wax #40	i														
Lactose	S		0			0					0		0		
Laminac 4116															
Laminac 4110															
Lamp black	i		1			0	0	0	1				0	0	0
Lead chromate	i														
Lead peroxide															
Lead silicate															
Lead thiocyanate	i		1	1		3	3			1	1		3	3	
Linseed oil	i	1			1							2			
Lithium hydride	R		1	1		2	2						1	1	
Magnesium carbonate	i	1				1	2		2						
Magnesium powder	R	1				1	2		2						
Manganese dioxide	i					2	2						3	3	
Manganese powder	i					2	2						3	3	
1-Methylaminoanthraquinone						1	1			1	1		1	1	
Orange antitraquinone															

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Table 1 (Cont'd)

Material	Solubility	Acute Local				Acute Systemic				Chronic Local			Chronic Systemic		
		Irritant	Ingestion	Inhalation	Allergen	Ingestion	Inhalation	Allergen	Irritant	Ingestion	Inhalation	Allergen	Ingestion	Inhalation	Allergen
Paraffin wax	i	0	0	0	0	0	0	0	1				0	0	0
Paranitroanile red															
Paris green	i	2	3		2	3	3		2			2	3	3	
Parlon	i														
Phosphine (gas)	i	2		2			3							3	
Phosphorus, red	i	2	3	3		2	2						2	2	
Polyvinyl acetate	i														
Polyvinyl chloride	i														
Potassium chlorate	S	1				2			1				2		
Potassium nitrate	S					2	2						2	2	
Potassium perchlorate	S	2	2	2		2							2		
Red gum															
Rosin	i				1							1			
Shellac	i														
Silicon (fused)															
Sil-o-cell	i														
Smoke, Yellow I															
Smoke, Red O															
Sodium bicarbonate	S	(Non-toxic)													
Sodium nitrate	S					2	2						2	2	
Sodium oxalate	S	3	3			3			1				1		
Sodium resinate															
Stearic acid	i														
Strontium carbonate	i	(Believed to be non-toxic)													
Strontium nitrate	S					2	2						2	2	

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Table 1 (Cont'd)

Materials	Solubility	Acute Local				Acute Systemic			Chronic Local			Chronic Systemic			
		Irritant	Ingestion	Inhalation	Allergen	Ingestion	Inhalation	Allergen	Irritant	Ingestion	Inhalation	Allergen	Ingestion	Inhalation	Allergen
Strontium oxalate	i	3	3			3			1				1		
Styrene	i	2	2	2		2	2		2				2	2	
Sugar (sucrose)	S	0	0		0	0		0	0	0		0	0		0
Sulfur	i	(Believed to be non-toxic)													
Super-Floss (Diatomaceous earth)	i			2							2			2	
Teflon	i	(Believed to be non-toxic but may emit toxic products above 400°F)													
Thiourea	S		1	1									1	1	
Uranine	S		1	1		1	1			1	1		1	1	
Violet anthraquinone															
Vistanex-L-100															
Zinc oxide	i		1	1		2	2		1	1	1		2	2	
Zinc powder	i	1	1	1		2	2		1	2	2		2	2	
Zirconium powder	i	(Believed to be non-toxic)													

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Table 2
COMPOSITIONS USED IN ANIMAL EXPOSURE TESTS

Material	Composition, parts by weight								
	Yellow Smoke	Green Smoke	Red Smoke	Black Smoke	Navy Blue Light	Red Flare	Aircraft Float Light	Green Flare	Aircraft Parachute Flare
Benzanthrone	23								
Indanthrene	23								
Potassium chlorate	25	27	28						
Sugar	22	20	22						
Sodium bicarbonate	7	8							
Binder	4	2.2	4						
Green dye (30% auramine hydrochloride, 70% 1,4-di- ρ -toluidine anthraquinone)	50								
Methylaminoanthraquinone			43						
Potassium bicarbonate			7						
Anthracene				19					
Magnesium				19		8	7	20	38.5
Hexachloroethane				62					
Potassium perchlorate					53			10	
Copper ammonium sulfate					19				
Cupric oxide					14				
Copper powder					7				
Arsenic trisulfide					5				
Shellac					9				
Strontium nitrate						38			
Ammonium perchlorate						15			
Strontium oxalate						10			
Red Phosphorus							50		
Manganese dioxide							34		
Zinc oxide							3		
Linseed oil							3		

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Table 2 (Cont'd)

Material	Composition, parts by weight								
	Yellow Smoke	Green Smoke	Red Smoke	Black Smoke	Navy Blue Light	Red Flare	Aircraft Float Light	Green Flare	Aircraft Parachute Flare
Barium nitrate								50	41.5
Polyvinyl chloride								16	
Asphaltum								4	
Sodium oxalate									10.0
Aluminum									5.5
Paraffin wax									2.5
Castor oil									1.0
Linseed oil									1.0

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LIST OF PYROTECHNIC ITEMS
AIRCRAFT EMERGENCY IDENTIFICATION SIGNAL, MK 6
(GREEN FLARE)

<u>Composition</u>		<u>Toxic Hazard</u>
Barium chlorate	87.0	Severe if ingested or inhaled
Shellac	11.0	None
Rosin	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium chloride	Solid	Moderately severe if ingested or inhaled
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

AIRCRAFT EMERGENCY IDENTIFICATION SIGNAL, MK 6
(RED FLARE)

<u>Composition</u>		<u>Toxic Hazard</u>
Potassium chlorate	63.0	Moderately severe if ingested or inhaled
Strontium nitrate	19.5	Moderately severe if ingested or inhaled
Shellac	15.5	None
Rosin	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Potassium chloride	Solid	Slight
Strontium oxide	Solid	Slight
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

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AIRCRAFT EMERGENCY IDENTIFICATION SIGNAL, MK 6
(WHITE FLARE)

<u>Composition</u>		<u>Toxic Hazard</u>
Barium nitrate	38.0	Moderately severe if ingested or inhaled
Potassium nitrate	38.0	Moderately severe if ingested or inhaled
Aluminum powder	14.0	Slight if inhaled
Magnesium powder	6.0	Very slight if inhaled or received through the skin
Graphite	4.0	None
Linseed oil	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Potassium hydroxide	Solid	Moderately severe as irritant to skin and mucous membranes
Aluminum oxide	Solid	Slight if inhaled
Magnesium oxide	Solid	None
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

AIRCRAFT EMERGENCY IDENTIFICATION SIGNAL, MK 7
(YELLOW SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Auramine O	59.0	Moderately severe if ingested or inhaled
Flaming Red R	8.0	
Potassium chlorate	22.0	Moderately severe if ingested or inhaled
Lamp black	11.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Auramine O	Solid	Moderately severe if ingested or inhaled
Flaming Red R	Solid	
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

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AIRCRAFT EMERGENCY IDENTIFICATION SIGNAL, MK 7
(RED SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Flaming Red A	66.0	
Potassium chlorate	23.0	Moderately severe if ingested or inhaled
Lactose	11.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Flaming Red A	Solid	
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

AIRCRAFT EMERGENCY IDENTIFICATION SIGNAL, MK 7 MOD 0
(GREEN SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Auramine O	24.0	Moderately severe if ingested or inhaled
Indigo	40.0	
Potassium chlorate	20.0	Moderately severe if ingested or inhaled
Lamp black	16.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Auramine O	Solid	Moderately severe if ingested or inhaled
Indigo	Solid	
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal.

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AIRCRAFT EMERGENCY IDENTIFICATION SIGNAL, MK 7 MOD 0
(BLACK SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Hexachloroethane	55.0	Moderately severe if ingested or inhaled
Anthracene	26.0	Very slight if ingested
Magnesium powder	19.0	Slight temporary if inhaled or received through the skin

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Magnesium chloride	Solid	Very slight if ingested or inhaled
Carbon	Solid	None
Carbon monoxide	Gas	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal.

AIRCRAFT FLARE, MK 4 MOD 1

<u>Composition</u>		<u>Toxic Hazard</u>
Barium nitrate	76.5	Moderately severe if ingested or inhaled
Aluminum, granulation No. 13	13.0	Very slight if inhaled
Sulfur	5.0	None
Castor oil	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazards</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Aluminum oxide	Solid	Very slight if inhaled
Sulfur dioxide	Gas	Very slight
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal.

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AIRCRAFT FLOAT LIGHT, MK 2, MK 3, MK 6 AND MODS

<u>Composition</u>		<u>Toxic Hazard</u>
Phosphorus, red	50.0	Moderately severe if ingested or inhaled
Manganese dioxide	34.0	Moderately severe if ingested or inhaled
Zinc oxide	3.0	None
Magnesium powder	7.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Phosphorus, red	Solid	Slight
Phosphorus, white	Solid	Highly toxic if ingested or absorbed; only small amounts formed but may re-ignite spontaneously
Phosphorus pentoxide	Solid	Moderately severe as caustic irritant to skin and mucous membranes
Manganous oxide	Solid	Slight
Manganese	Solid	Slight
Zinc oxide	Solid	None

Disposal: Any items which are damaged or any remains after accidental burning should be disposed of by sinking at sea or by thorough incineration. Avoid handling such items with bare hands. Any damaged or partially burned signals must be stored in metal fireproof cans until final disposition.

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AIRCRAFT PARACHUTE FLARE, MK 5 MOD 9

<u>Composition</u>		<u>Toxic Hazard</u>
Barium nitrate	43.0	Moderately severe if ingested or inhaled
Magnesium powder	36.0	Slight temporary if inhaled or received through the skin
Sodium oxalate	12.5	Moderately severe if ingested or inhaled
Aluminum flakes	4.0	Very slight, if inhaled
Paraffin wax	2.5	None
Castor oil	1.0	None
Linseed oil	1.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Magnesium oxide	Solid	Slight, if fresh fumes are inhaled
Sodium hydroxide	Solid	Very slight local corrosive effect on skin or mucous membranes
Aluminum oxide	Solid	Very slight if inhaled
Nitrogen	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

AIRCRAFT PARACHUTE FLARE, MK 5 MOD 10

<u>Composition</u>		<u>Toxic Hazard</u>
Barium nitrate	21.0	Moderately severe if ingested or inhaled
Sodium nitrate	21.0	Moderately severe if ingested or inhaled
Sodium oxalate	5.0	Moderately severe if ingested or inhaled
Magnesium powder	48.0	Slight temporary if inhaled or received through the skin
Paraffin wax	3.0	None
Castor oil	1.0	None
Linseed oil	1.0	None

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Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Barium oxide	Solid	Moderately severe if ingested or inhaled
Sodium hydroxide	Solid	Very slight local corrosive effect on skin or mucous membranes
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

AIRCRAFT PARACHUTE FLARE, MK 6 MOD 6

<u>Composition</u>		<u>Toxic Hazard</u>
Barium nitrate	41.5	Moderately severe if ingested or inhaled
Sodium oxalate	10.0	Moderately severe if ingested or inhaled
Aluminum powder	5.5	Very slight, if inhaled
Magnesium powder	38.5	Slight temporary if inhaled or received through the skin
Paraffin wax	2.5	None
Castor oil	1.0	None
Linseed oil	1.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Barium oxide	Solid	Moderately severe if ingested or inhaled
Sodium hydroxide	Solid	Very slight local corrosive effect on skin or mucous membranes
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

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AIRCRAFT PARACHUTE FLARE, MK 8 MODS 1 AND 2

<u>Composition</u>		<u>Toxic Hazard</u>
Barium nitrate	39.3	Moderately severe if ingested or inhaled
Sodium oxalate	10.0	Moderately severe if ingested or inhaled
Aluminum powder	6.5	Very slight if inhaled
Magnesium powder	37.1	Slight temporary if inhaled or received through the skin
Paraffin wax	2.7	None
Castor oil	1.0	None
Linseed oil	1.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Sodium hydroxide	Solid	Very slight local corrosive effect on skin or mucous membranes
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

AIRCRAFT PARACHUTE FLARE, MK 10 MOD 0

<u>Composition</u>		<u>Toxic Hazard</u>
Barium nitrate	41.7	Moderately severe if ingested or inhaled
Sodium oxalate	10.0	Moderately severe if ingested or inhaled
Aluminum powder	5.5	Very slight if inhaled
Magnesium powder	38.5	Slight temporary if inhaled or received through the skin
Paraffin wax	2.3	None
Castor oil	1.0	None
Linseed oil	1.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Magnesium oxide	Solid	Slight, if fresh fumes are inhaled
Sodium hydroxide	Solid	Very slight local corrosive effect on skin or mucous membranes

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<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

AIRCRAFT PARACHUTE FLARE, MK 11 MOD 0

<u>Composition</u>		<u>Toxic Hazard</u>
Barium nitrate	41.7	Moderately severe if ingested or inhaled
Sodium oxalate	10.0	Moderately severe if ingested or inhaled
Magnesium powder	38.5	Slight temporary if inhaled or received through the skin
Aluminum powder	5.5	Very slight if inhaled
Paraffin wax	2.3	None
Linseed oil	1.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Sodium hydroxide	Solid	Very slight corrosive effect on skin or mucous membranes
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

AIRCRAFT PARACHUTE FLARE, MK 24 MOD 0

<u>Composition</u>		<u>Toxic Hazard</u>
Magnesium powder	58.0	Slight temporary if inhaled or received through the skin
Sodium nitrate	37.5	Moderately severe if ingested or inhaled
Laminac 4116	4.5	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Sodium hydroxide	Solid	Moderately severe corrosive action on skin and mucous membranes

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<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

AIRCRAFT RECALL SIGNAL, MK 1
(WHITE FLARE)

<u>Composition</u>		<u>Toxic Hazard</u>
Barium nitrate	38.0	Moderately severe if ingested or inhaled
Potassium nitrate	38.0	Moderately severe if ingested or inhaled
Aluminum powder	14.0	Slight if inhaled
Magnesium powder	6.0	Very slight if inhaled or received through the skin
Graphite	4.0	None
Linseed oil	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Potassium hydroxide	Solid	Moderately severe as irritant to skin and mucous membranes
Aluminum oxide	Solid	Slight if inhaled
Magnesium oxide	Solid	None
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

AIRCRAFT RECALL SIGNAL, MK 1
(RED FLARE)

<u>Composition</u>		<u>Toxic Hazard</u>
Potassium chlorate	65.0	Moderately severe if ingested or inhaled
Strontium nitrate	20.0	Moderately severe if ingested or inhaled
Dextrin	5.0	None
Shellac	13.0	None
Rosin	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Potassium chloride	Solid	Slight
Strontium oxide	Solid	Slight
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

AVIATOR DISTRESS SIGNAL, MK 60 MOD 0

<u>Composition</u>		<u>Toxic Hazard</u>
Dye, Oil scarlet 60	10.0	Slight
Dye, Golden Yellow	3.0	Slight
Potassium chlorate	4.4	Moderately severe if ingested or inhaled
Sugar	3.2	None
Sil-o-cel	0.8	None
Graphite	0.2	None
Paraffin oil	1.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Oil scarlet 60	Solid	Slight
Golden Yellow	Solid	Slight
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

CARTRIDGE SLICK MARKER, AN MK 1 MOD 0

(See Depth Charge Marker Mk 1-2 for Composition and other information)

COLOR BURST UNIT, MK 1 MOD 0

<u>Composition</u>		<u>Toxic Hazard</u>
Calcium resinate	2.4	None
Strontium oxalate	4.8	Moderately severe if ingested or inhaled
Potassium perchlorate	12.0	Moderately severe if ingested or inhaled

<u>Composition</u>		<u>Toxic Hazard</u>
Strontium nitrate	24.0	Moderately severe if ingested or inhaled
Magnesium powder	16.8	Slight temporary if inhaled or received through the skin

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Strontium oxide	Solid	Slight if ingested or inhaled
Strontium chloride	Solid	Slight if ingested or inhaled
Potassium chloride	Solid	Slight if ingested or inhaled
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Calcium oxide	Solid	None
Carbon dioxide	Gas	None
Nitrogen	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled

Disposal: Normal routine disposal

COLOR BURST UNIT, MK 2 MOD 0

<u>Composition</u>		<u>Toxic Hazard</u>
Calcium resinate	9.6	None
Strontium oxalate	19.2	Moderately severe if ingested or inhaled
Potassium perchlorate	48.0	Moderately severe if ingested or inhaled
Strontium nitrate	96.0	Moderately severe if ingested or inhaled
Magnesium powder	67.2	Slight temporary if inhaled or received through the skin

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Strontium oxide	Solid	Slight if ingested or inhaled
Strontium chloride	Solid	Slight if ingested or inhaled
Potassium chloride	Solid	Slight if ingested or inhaled
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Calcium oxide	Solid	Slight if ingested or inhaled
Carbon oxide	Solid	Slight if ingested or inhaled
Carbon dioxide	Gas	None
Nitrogen	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled

Disposal: Normal routine disposal

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COLOR BURST UNIT, MK 3 MOD 0

<u>Composition</u>		<u>Toxic Hazard</u>
Oil Red "O" (C.I. Solvent Red 27)	45.5	
Guanidine nitrate	45.5	Moderately severe if ingested or inhaled
Anthracene	9.10	Very Slight if ingested

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Oil Red "O"	Solid	
Carbon dioxide	Gas	None
Nitrogen	Gas	None

Disposal: Normal routine disposal

COLOR BURST UNIT, MK 3 MOD 1

<u>Composition</u>		<u>Toxic Hazard</u>
Oil Yellow No. 2681	45.5	
Guanidine nitrate	45.5	Moderately severe if ingested or inhaled
Anthracene	9.1	Slight if ingested

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Oil Yellow 2681	Solid	
Nitrogen	Gas	None
Nitric oxide	Gas	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

COLOR BURST UNIT, MK 5 MOD 0

<u>Composition</u>		<u>Toxic Hazard</u>
Anthraquinone Red	45.0	
Guanidine nitrate	45.0	Moderately severe if ingested or inhaled
Anthracene	10.0	Very slight if ingested

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Anthraquinone Red	Solid	
Carbon dioxide	Gas	None
Nitrogen	Gas	None

Disposal: Normal routine disposal

COLOR BURST UNIT, MK 6 MOD 0

<u>Composition</u>		<u>Toxic Hazard</u>
Auramine hydrochloride	45.0	Moderately severe if ingested or inhaled
Guanidine nitrate	45.0	Moderately severe if ingested or inhaled
Anthracene	10.0	Very slight if ingested

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Auramine hydrochloride	Solid	Moderately severe if ingested or inhaled
Nitrogen	Gas	None
Nitric oxide	Gas	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

COLOR BURST UNIT, MK 7 MOD 0

<u>Composition</u>		<u>Toxic Hazard</u>
1, 4-Dimethylamino anthraquinone	45.0	
Guanidine nitrate	45.0	Moderately severe if ingested or inhaled
Anthracene	10.0	Very slight if ingested

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
1, 4-Dimethylamino anthraquinone	Solid	
Carbon dioxide	Gas	None

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Nitrogen	Gas	None
Nitric oxide	Gas	Moderately severe if inhaled

Disposal: Normal routine disposal

COLORED SMOKE GRENADE MK 3 MOD 1
(BLACK SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Hexachloroethane	62.0	Moderately severe if ingested or inhaled
Anthracene	19.0	Slight if ingested
Magnesium powder	19.0	Slight temporary if inhaled or received through the skin

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Magnesium chloride	Solid	Very slight if ingested or inhaled
Carbon	Solid	None
Hydrogen chloride	Gas	Slight corrosive effect on skin or mucous membranes
Carbon	Solid	None
Carbon dioxide	Gas	None
Nitrogen	Gas	None

Disposal: Normal routine disposal

COLORED SMOKE GRENADE, MK 3 MOD 1
(GREEN SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Auramine O	15.0	Moderately severe if ingested or inhaled
Indigo	26.0	
Potassium chlorate	33.0	Moderately severe if ingested or inhaled
Lactose	26.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Auramine O	Solid	Moderately severe if ingested or inhaled
Indigo	Solid	
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

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COLORED SMOKE GRENADE MK 3 MOD 1
(RED SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Paranitroaniline Red	60.0	
Potassium chlorate	20.0	Moderately severe if ingested or inhaled
Lactose	20.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Paranitroaniline Red	Solid	
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

COLORED SMOKE GRENADE, MK 3 MOD 1
(YELLOW SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Auramine O	34.0	Moderately severe if ingested or inhaled
Chrysoidin Y	9.0	Slight if ingested or inhaled
Potassium chlorate	33.0	Moderately severe if ingested or inhaled
Lactose	24.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Auramine O	Solid	Moderately severe if ingested or inhaled
Chrysoidin Y	Solid	Slight
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

DAY AND NIGHT DISTRESS SIGNAL, MK 13 MOD 0

<u>Composition (flare)</u>		<u>Toxic Hazard</u>
Strontium nitrate	45.0	Moderately severe if ingested or inhaled
Potassium perchlorate	15.0	Moderately severe if ingested or inhaled
Hexachlorobenzene	12.0	Severe if ingested or inhaled
Magnesium powder	21.0	Slight temporary if inhaled or received through the skin
Gilsonite	7.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Strontium oxide	Solid	Moderately severe if ingested or inhaled
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Strontium chloride	Solid	Moderately severe if ingested or inhaled
Potassium chloride	Solid	None
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

<u>Composition (smoke)</u>		<u>Toxic Hazard</u>
HV Orange B	70.2	
Potassium chlorate	14.6	Slight to moderately severe if ingested
Sucrose	13.3	None
Graphite	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
HV Orange B	Smoke	
Potassium chloride	Solid	None
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

DEPTH CHARGE MARKER, MK 1 MOD 1

<u>Composition</u>		<u>Toxic Hazard</u>
Uranine	40	Toxicity not fully known but hazard is probably slight
Inert (soluble)	60	Toxicity unknown but hazard is probably slight

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Uranine	Dye, powder	Toxicity not fully known but hazard is probably slight
Inert (soluble)	Solid (soluble)	Toxicity unknown but hazard is probably slight

Disposal: Normal routine disposal

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DEPTH CHARGE MARKER, MK 1 MOD 2

<u>Composition</u>		<u>Toxic Hazard</u>
Uranine	86	See under MK 1-1 for all other information.
Inert (soluble)	14	

DEPTH CHARGE MARKER, MK 1 MOD 3

<u>Composition</u>		<u>Toxic Hazard</u>
Stearated Chrome yellow pigment	100	Moderately severe if ingested or inhaled

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Chrome yellow	Powder (insoluble)	Moderately severe if ingested or inhaled

Disposal: Normal routine disposal

DEPTH CHARGE MARKER, MK 2 MOD 0

<u>Composition</u>		<u>Toxic Hazard</u>
Calcium carbide	95.0	Evolves acetylene when wet which may produce toxic effects if inhaled Evolves phosphine gas on contact with water, this gas is a severe toxic hazard, also spontaneously flammable under some conditions Inhalation or ingestion of phosphides can produce severe effects
Calcium phosphide	5.0	

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Acetylene	Gas	Slight
Calcium hydroxide	Solid	Slight
Phosphine	Gas	Moderately severe if inhaled
Carbon dioxide	Gas	None
Phosphorus pentoxide	Solid	Slight caustic or irritant effect on skin and mucous membranes

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Disposal: Defective or damaged items should be disposed of by sinking at sea. Prevent contact of the signals with water or moisture while awaiting disposal. Do not handle chemical components with bare hands.

DISTRESS SIGNAL MK 1 MOD 0
(ORANGE SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
HV Orange B	69.6	
Potassium chlorate	16.2	Moderately severe if ingested or inhaled
Sucrose	14.2	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
HV Orange B	Solid	
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

DISTRESS SIGNAL, MK 1 MOD 1
(ORANGE SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
HV Orange	70.2	
Potassium chlorate	14.6	Moderately severe if ingested or inhaled
Sucrose	13.3	None
Graphite	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
HV Orange	Solid	
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

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DISTRESS SIGNAL, MK 1 MOD 0
(RED LIGHT)

<u>Composition</u>		<u>Toxic Hazard</u>
Barium chlorate	54.0	Moderately severe if ingested or inhaled
Strontium nitrate	30.0	Moderately severe if ingested or inhaled
Stearic acid	10.0	None
Shellac	6.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium chloride	Solid	Moderately severe if ingested or inhaled
Strontium chloride	Solid	Moderately severe if ingested or inhaled
Barium nitrate	Solid	Moderately severe if ingested or inhaled
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

DISTRESS SIGNAL MK 1 MOD 1
(BLUE LIGHT)

<u>Composition</u>		<u>Toxic Hazard</u>
Potassium chlorate	56	Moderately severe if ingested or inhaled
Copper chloride	22	Moderately severe if ingested or inhaled
Copper oxide	13	Moderately severe if ingested or inhaled
Shellac	7	None
Stearic acid	2	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Potassium chloride	Solid	Slight if ingested
Cupric chloride	Solid	Moderately severe if ingested or inhaled
Cupric oxide	Solid	Moderately severe if ingested or inhaled
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

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DISTRESS SIGNAL, MK 1 MOD 1
(ALTERNATE)

<u>Composition</u>		<u>Toxic Hazard</u>
Potassium perchlorate	39.8	Moderately severe if ingested or inhaled
Barium nitrate	19.5	Moderately severe if ingested or inhaled
Paris green	32.6	Severe if ingested or inhaled, moderate allergen effect and irritant
Stearic acid	8.2	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Potassium chloride	Solid	Slight if ingested
Barium oxide	Solid	Moderately severe if ingested or inhaled
Cupric oxide	Solid	Moderately severe if ingested or inhaled
Arsenic pentoxide	Solid	Severe if ingested or inhaled, moderate allergen and irritant
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

DISTRESS SIGNAL MK : MOD 1
(ALTERNATE)

<u>Composition</u>		<u>Toxic Hazard</u>
Potassium chlorate	53	Moderately severe if ingested or inhaled
Copper ammonium sulfate	19	Moderately severe if ingested or inhaled
Copper oxide	14	Moderately severe if ingested or inhaled
Arsenic trisulfide	5	Moderately severe if ingested or inhaled
Copper powder	7	Moderately severe if ingested or inhaled
Shellac	9	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Potassium chloride	Solid	Slight if ingested
Cupric sulfate	Solid	Moderately severe if ingested or inhaled
Arsenic pentoxide	Solid	Moderately severe if ingested or inhaled

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<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Sulfur dioxide	Gas	Very slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

DISTRESS SIGNAL, MK 1 MOD 2
(WHITE LIGHT)

<u>Composition</u>		<u>Toxic Hazard</u>
Potassium chlorate	70	Moderately severe if ingested or inhaled
Magnesium powder	3.0	None
Polyvinyl chloride	23.0	None
Linseed oil	4.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None
Hydrogen chloride	Gas	Slight irritant to skin, eyes lungs and mucous membranes

Disposal: Normal routine disposal

DRILL MINE SIGNAL, MK 25

<u>Composition</u>		<u>Toxic Hazard</u>
Calcium phosphide	20	Inhalation or ingestion of phosphides can produce severe effects; phosphides evolve phosphine gas on contact with water; this gas is a severe toxic hazard, spontaneously flammable under some conditions.
Magnesium aluminum phosphide	80	

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Calcium hydroxide	Solid	None
Magnesium hydroxide	Solid	None
Aluminum hydroxide	Solid	None

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Phosphine	Gas	Inhalation or ingestion of phosphides can produce severe effects; phosphides evolve phosphine gas on contact with water; this gas is a severe toxic hazard, spontaneously flammable under some conditions.

Disposal: Defective or damaged items should be disposed of by sinking at sea. Prevent contact of the signals with water or moisture while awaiting disposal. Do not handle chemical components with bare hands.

DRILL MINE SIGNAL, MK 39 MOD 0
(GREEN FLARE AND SMOKE)

<u>Composition (flare)</u>		<u>Toxic Hazard</u>
Barium nitrate	50.0	Moderately severe if ingested or inhaled
Potassium perchlorate	10.0	Moderately severe if ingested or inhaled
Magnesium powder	20.0	Slight temporary if inhaled or received through the skin
Polyvinyl chloride	16.0	None
Asphaltum	4.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Barium chloride	Solid	Moderately severe if ingested or inhaled
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

<u>Composition (smoke)</u>		<u>Toxic Hazard</u>
Dye, Green, MIL-D-3709 (Auramine hydrochloride 27.3-31.3% 1, 4-di-p-toluidinoanthraquinone 68.7-72.7%)	50.0	Moderately severe if ingested or inhaled
Potassium chlorate	27.0	Moderately severe if ingested or inhaled
Sodium bicarbonate	8.0	None

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<u>Composition (smoke)</u>		<u>Toxic Hazard</u>
Sugar	20.0	None
Binder	2.2	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Green dye	Solid	Moderately severe if ingested or inhaled
Potassium chloride	Solid	Slight
Sodium carbonate	Solid	Moderately severe irritant effect if ingested or inhaled
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

DRILL MINE SIGNAL, MK 40 MOD 0
(GREEN FLARE AND SMOKE)

<u>Composition (flare)</u>		<u>Toxic Hazard</u>
Barium nitrate	50.0	Moderately severe if ingested or inhaled
Potassium perchlorate	10.0	Moderately severe if ingested or inhaled
Magnesium powder	20.0	Slight temporary if inhaled or received through the skin
Polyvinyl chloride	16.0	None
Asphaltum	4.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Barium chloride	Solid	Moderately severe if ingested or inhaled
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

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<u>Composition (smoke)</u>		<u>Toxic Hazard</u>
Dye, Green (Auramine hydro- chloride 27.3-31.3% 1, 4-di-p-toluidino- anthraquinone 68.7-72.7%)	50	Moderately severe if ingested or inhaled
Potassium chlorate	27.0	Moderately severe if ingested or inhaled
Sodium bicarbonate	8.0	None
Sugar	20.0	None
Binder	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Dye, Green	Solid	Moderately severe if ingested or inhaled
Potassium chloride	Solid	Slight
Sodium carbonate	Solid	Moderately severe irritant if ingested or inhaled
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

DRILL MINE SIGNAL, MK 44 MOD 0 AND MK 43 MOD 0
(RED FLARE AND SMOKE)

<u>Composition (flare)</u>		<u>Toxic Hazard</u>
Strontium nitrate	38.0	Moderately severe if ingested or inhaled
Ammonium perchlorate	15.0	Moderately severe if ingested or inhaled
Strontium oxalate	10.0	Moderately severe if ingested or inhaled
Magnesium powder	8.0	Slight temporary if inhaled or received through the skin
Stearic acid	6.0	None
Polyvinyl chloride	17.0	None
Calcium silicide	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Strontium oxide	Solid	Moderately severe if ingested or inhaled
Strontium chloride	Solid	Moderately severe if ingested or inhaled
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Ammonium chloride	Solid	None
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

<u>Composition (smoke)</u>		<u>Toxic Hazard</u>
Anthraquinone Red	43.0	Slight
Potassium chlorate	28.0	Moderately severe if ingested or inhaled
Sugar	20.0	None
Sodium bicarbonate	5.0	None
Sil-o-cel	4.0	None
Binder	2.2	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
1-Methylamino-anthraquinone	Solid	Slight
Potassium chloride	Solid	Slight if ingested or inhaled
Sodium carbonate	Solid	Slight if ingested or inhaled
Carbon dioxide	Gas	None
Nitrogen	Gas	None

Disposal: Normal routine disposal

FALSE TARGET CAN, MK 2 MOD 0 AND MK 2 MOD 1

<u>Composition</u>		<u>Toxic Hazard</u>
Lithium hydride	79.2	Moderately severe if ingested or inhaled - evolves hydrogen on contact with water
Paraffin	19.8	None
Aerosol O.S.	1.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Lithium hydroxide	Solid	Moderately severe if ingested or inhaled
Hydrogen	Gas	None

Disposal: Defective or damaged items should be disposed of by sinking at sea. Prevent contact of the signals with water or moisture while awaiting disposal.

FLOAT FLARE, MK 15 (TORPEDO BOAT)

<u>Composition</u>		<u>Toxic Hazard</u>
Barium nitrate	63.0	Moderately severe if ingested or inhaled
Sodium oxalate	11.0	Moderately severe if ingested or inhaled
Aluminum powder	5.0	Very slight if inhaled
Aluminum grain	5.0	Very slight if inhaled
Magnesium powder	11.0	Slight, temporary, if inhaled or received through the skin
Sulfur	5.0	None
Castor oil	3.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Sodium hydroxide	Solid	Very slight corrosive effect on skin or mucous membranes
Aluminum oxide	Solid	Very slight if inhaled
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Sulfur dioxide	Gas	Slight
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

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FLOAT SMOKE, MK 1
(WHITE SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Hexachloroethane	46.5	Moderately severe if ingested or inhaled
Zinc dust	38.3	Moderately severe if ingested or inhaled
Ammonium perchlorate	6.1	Moderately severe if ingested or inhaled
Calcium chlorate	3.0	Slight
Ammonium chloride	6.1	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Zinc chloride	Solid	Severe if ingested or inhaled
Zinc oxide	Solid	Inhalation of fresh fumes may be hazardous
Ammonia	Gas	Slight
Nitrogen	Gas	None
Hydrogen chloride	Gas	Slight irritant effect on skin or mucous membranes
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

IGNITER COMPOSITION, 6-6-6

<u>Composition</u>	<u>Parts/ Weight</u>	<u>Toxic Hazard</u>
Lead peroxide	6	Moderately severe if ingested or inhaled
Cupric oxide	6	Moderately severe if ingested or inhaled
Silicon, fused	6	Moderately severe if ingested or inhaled

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Lead silicate	Solid	Slight if inhaled
Copper silicate	Solid	Slight if inhaled

Disposal: Normal routine disposal

IGNITER COMPOSITION, 6-6-8

<u>Composition</u>	<u>Parts/ Weight</u>	<u>Toxic Hazard</u>
Lead peroxide	6	Moderately severe if ingested or inhaled
Cupric oxide	6	Moderately severe if ingested or inhaled
Silicon, fused	8	Moderately severe if ingested or inhaled

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Lead silicate	Solid	Slight if inhaled
Copper silicate	Solid	Slight if inhaled

Disposal: Normal routine disposal

ILLUMINATING HAND GRENADE, MK 1

<u>Composition</u>		<u>Toxic Hazard</u>
Barium nitrate	42.0	Moderately severe if ingested or inhaled
Sodium oxalate	10.0	Moderately severe if ingested or inhaled
Aluminum powder	3.5	Very slight if inhaled
Aluminum grain	15.5	Very slight if inhaled
Sulfur	5.0	None
Castor oil	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Sodium hydroxide	Solid	Very slight corrosive effect on the skin and mucous membranes
Aluminum oxide	Solid	Very slight if inhaled
Sulfur dioxide	Gas	Slight
Carbon dioxide	Gas	None

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<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

ILLUMINATING PROJECTILE LOAD MK 4 MOD 7 (5"/54)
ILLUMINATING PROJECTILE LOAD MK 10 MOD 0 (5"/54)
ILLUMINATING PROJECTILE LOAD MK 9 MODS 0 AND 1 (6"/47)
ILLUMINATING PROJECTILE LOAD MK 11 MOD 0 (5"/38)
ILLUMINATING PROJECTILE LOAD MK 12 MOD 0 (3"/50)

<u>Composition</u>		<u>Toxic Hazard</u>
Barium nitrate	53.0	Moderately severe if ingested or inhaled
Magnesium powder	35.0	Slight if inhaled or received through the skin
Aluminum flakes	2.0	None
Paraffin wax	7.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

JET ENGINE IGNITER, MK 243 MOD 1

<u>Composition</u>		<u>Toxic Hazard</u>
Sodium nitrate	65.0	Moderately severe if ingested or inhaled
Magnesium	25.0	Slight if inhaled or received through the skin
Shellac	10.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Sodium hydroxide	Solid	Moderately severe corrosive effect on skin and mucous membranes
Magnesium oxide	Solid	Slight if fresh fumes are inhaled

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Nitrogen	Gas	None
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled

Disposal: Normal routine disposal

LOCATION MARKER KIT, MK 19 MOD 0

<u>Composition</u>		<u>Toxic Hazard</u>
Yellow dye, Mil-D-50029	15	
Auramine hydrochloride	10	Moderately severe in ingested or inhaled
Benzanthrone	13	Moderately severe if ingested or inhaled
Methylaminoanthraquinone	10	Slight
Potassium chlorate	24	Moderately severe if ingested or inhaled
Sugar	20	None
Sodium bicarbonate	5	None
Sil-o-cel	5	None
8% solution of camphorated nitrocellulose in acetone	5	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Yellow dye	Solid	
Auramine hydrochloride	Solid	Moderately severe if ingested or inhaled
Benzanthrone	Solid	Moderately severe if ingested or inhaled
Methylaminoanthraquinone	Solid	Slight
Potassium chloride	Solid	Slight
Sodium carbonate	Solid	None
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

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MARINE LOCATION MARKER,
MK 10 MODS 0 AND 1 AND MK 25

MARINE MARKER, MK 7 MOD 2 AND MK 9 MOD 0
(YELLOW FLAME AND WHITE SMOKE)

(See AIRCRAFT FLOAT LIGHT, MK 2, MK 3, MK 6 and MODS for composition and other information.)

MARINE MARKER, MK 8 MOD 0

(See DEPTH CHARGE MARKER, MK 1-3 for composition and other information.)

MARINE MARKER MK 14 AND MK 15
(RED SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Anthraquinone Red	46.5	Slight
Potassium chlorate	26.3	Moderately severe if ingested or inhaled
Sulfur	10.3	None
Sodium bicarbonate	17.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Anthraquinone Red	Solid	Slight
Potassium chloride	Solid	Slight
Sodium carbonate	Solid	Moderately severe as irritant if ingested or inhaled
Sulfur dioxide	Gas	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

NIGHT DRIFT SIGNAL, MK 5 MODS 0, 1, 2, 3 AND 4

(See AIRCRAFT FLOAT LIGHT, MK 2, MK 3, MK 6 and MODS for composition and other information.)

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PISTOL SIGNAL LIGHT CARTRIDGE, MK 2

<u>Composition (red)</u>		<u>Toxic Hazard</u>
Potassium chlorate	64.0	Moderately severe if ingested or inhaled
Strontium nitrate	18.0	Moderately severe if ingested or inhaled
Shellac	18.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Potassium chloride	Solid	Slight
Strontium oxide	Solid	Slight
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

<u>Composition (white)</u>		<u>Toxic Hazard</u>
Barium nitrate	13.0	Moderately severe if ingested or inhaled
Potassium nitrate	54.0	Moderately severe if ingested or inhaled
Antimony sulfide	18.0	Moderately severe if ingested or inhaled
Sulfur	13.0	None
Dextrin	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Potassium hydroxide	Solid	Moderately severe as irritant to skin or mucous membranes
Antimony pentoxide	Solid	Moderately severe if ingested or inhaled
Sulfur dioxide	Gas	Slight, irritant to skin and mucous membranes
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

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<u>Composition (green)</u>		<u>Toxic Hazard</u>
Barium chlorate	50.0	Moderately severe if ingested or inhaled
Barium nitrate	40.0	Moderately severe if ingested or inhaled
Shellac	11.0	None
Rosin	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium chloride	Solid	Moderately severe if ingested or inhaled
Barium oxide	Solid	Moderately severe if ingested or inhaled
Nitrogen	Gas	None
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled

Disposal: Normal routine disposal

PISTOL SIGNAL LIGHT CARTRIDGE, MK 4 MOD 0

<u>Composition (white)</u>		<u>Toxic Hazard</u>
Barium nitrate	38.0	Moderately severe if ingested or inhaled
Potassium nitrate	38.0	Moderately severe if ingested or inhaled
Aluminum powder	14.0	Slight if inhaled
Magnesium powder	6.0	Very slight if inhaled or received through the skin
Graphite	4.0	None
Linseed oil	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Potassium hydroxide	Solid	Moderately severe as irritant to skin and mucous membranes
Aluminum oxide	Solid	Slight if inhaled
Magnesium oxide	Solid	None
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Severe if inhaled in quantity
Nitrogen	Gas	None

Disposal: Normal routine disposal

<u>Composition (green)</u>		<u>Toxic Hazard</u>
Barium chlorate	87.0	Severe if ingested or inhaled
Shellac	11.0	None
Rosin	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium chloride	Solid	Moderately severe if ingested or inhaled
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

<u>Composition (alternate green)</u>		<u>Toxic Hazard</u>
Barium nitrate	67.2	Moderately severe if ingested or inhaled
Hexachlorobenzene	14.7	Moderately severe if ingested or inhaled
Copper powder	1.9	Very slight if ingested or inhaled
Magnesium powder	14.7	Slight if inhaled or received through the skin
Linseed oil	1.5	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Barium chloride	Solid	Moderately severe if ingested or inhaled
Cupric oxide	Solid	None
Magnesium oxide	Solid	None
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Severe if inhaled in quantity
Nitrogen	Gas	None

Disposal: Normal routine disposal

<u>Composition (red)</u>		<u>Toxic Hazard</u>
Potassium chlorate	63.0	Moderately severe if ingested or inhaled
Strontium nitrate	19.5	Moderately severe if ingested or inhaled
Shellac	15.5	None
Rosin	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Potassium chloride	Solid	Slight
Strontium oxide	Solid	Slight
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

<u>Composition (alternate red)</u>		<u>Toxic Hazard</u>
Potassium chlorate	19.4	Moderately severe if ingested or inhaled
Strontium nitrate	52.8	Moderately severe if ingested or inhaled
Hexachlorobenzene	4.6	Moderately severe if ingested or inhaled
Magnesium powder	14.9	Slight if inhaled or received through the skin
Gilsonite	8.3	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Potassium chloride	Solid	Slight
Strontium oxide	Solid	Slight
Strontium chloride	Solid	Slight
Magnesium oxide	Solid	None

Disposal: Normal routine disposal

<u>Composition (yellow)</u>		<u>Toxic Hazard</u>
Potassium nitrate	15.5	Moderately severe if ingested or inhaled
Sodium oxalate	64.0	Severe if ingested or inhaled
Strontium nitrate	15.5	Moderately severe if ingested or inhaled
Aluminum powder	3.5	None
Castor oil	2.0	None
Rosin	5.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Potassium hydroxide	Solid	Moderately severe irritant to skin and mucous membranes

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<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Sodium hydroxide	Solid	Moderately severe irritant to skin and mucous membranes
Strontium oxide	Solid	Slight
Carbon dioxide	Gas	None
Nitrogen	Gas	None

Disposal: Normal routine disposal

PISTOL ROCKET SIGNAL, MK 1 MOD 0

<u>Composition (green comet)</u>		<u>Toxic Hazard</u>
Barium chlorate	82.5	Moderately severe if ingested or inhaled
Shellac	10.4	None
Dextrin	5.2	None
Rosin	1.9	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium chloride	Solid	Moderately severe if ingested or inhaled
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

<u>Composition (red comet)</u>		<u>Toxic Hazard</u>
Potassium chlorate	68.5	Moderately severe if ingested or inhaled
Strontium carbonate	14.3	Slight
Shellac	11.5	None
Dextrin	5.7	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Potassium chloride	Solid	Slight
Strontium chloride	Solid	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

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<u>Composition (yellow comet)</u>		<u>Toxic Hazard</u>
Barium nitrate	65.2	Moderately severe if ingested or inhaled
Sodium oxalate	8.2	Moderately severe if ingested or inhaled
Aluminum powder	14.3	Slight if inhaled
Sulfur	4.1	None
Dextrin	8.1	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Aluminum oxide	Solid	None
Sodium carbonate	Solid	Moderately severe as irritant on skin or mucous membranes
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

PISTOL ROCKET SIGNAL, MK 1 MOD 2
(CHAMELEON)

<u>Composition (green)</u>		<u>Toxic Hazard</u>
Barium chlorate	82.5	Moderately severe if ingested or inhaled
Dextrin	5.2	None
Shellac	10.4	None
Rosin	1.9	None

Probable Principal Products or Residues

<u>Materials</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium chloride	Solid	Moderately severe if ingested or inhaled
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

<u>Composition (red)</u>		<u>Toxic Hazard</u>
Potassium chlorate	71.2	Moderately severe if ingested or inhaled
Strontium carbonate	14.8	Slight if ingested or inhaled
Dextrin	2.2	None
Shellac	11.8	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Potassium chloride	Solid	Slight
Strontium oxide	Solid	Slight
Strontium chloride	Solid	Slight
Carbon dioxide	Gas	None

<u>Composition (white)</u>		<u>Toxic Hazard</u>
Barium nitrate	70.7	Moderately severe if ingested or inhaled
Potassium nitrate	1.6	Slight if ingested or inhaled
Antimony sulfide	3.3	Slight if ingested or inhaled
Aluminum powder	13.3	Slight if inhaled
Sulfur	6.6	None
Dextrin	4.5	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Antimony oxide	Solid	Slight
Aluminum oxide	Solid	None
Sulfur dioxide	Gas	None
Carbon dioxide	Gas	None
Nitrogen	Gas	None

Disposal: Normal routine disposal

PISTOL ROCKET SIGNAL, MK 1 MOD 4
(CHAMELEON, OCCULTING)

<u>Composition (yellow)</u>		<u>Toxic Hazard</u>
Barium nitrate	67.6	Moderately severe if ingested or inhaled
Sodium oxalate	8.2	Moderately severe if ingested or inhaled
Aluminum powder	19.7	Slight if inhaled
Sulfur	4.2	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Sodium hydroxide	Solid	Slight corrosive effect on skin or mucous membranes
Aluminum oxide	Solid	None
Nitrogen dioxide	Gas	Severe if inhaled in quantity
Sulfur dioxide	Gas	None
Nitrogen	Gas	None

Disposal: Normal routine disposal

Composition (green)Toxic Hazard

Barium chlorate	87.0	Moderately severe if ingested or inhaled
Shellac	11.0	None
Rosin	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium chloride	Solid	Moderately severe if ingested or inhaled
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

Composition (red)Toxic Hazard

Potassium perchlorate	40.0	Moderately severe if ingested or inhaled
Strontium nitrate	16.0	Moderately severe if ingested or inhaled
Hexachlorobenzene	10.0	Severe if ingested or inhaled
Magnesium powder	33.0	Slight if inhaled or received through the skin
Asphaltum	12.0	None
Dextrin	3.0	None
Castor oil	1.0	None
Linseed oil	3.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Potassium chloride	Solid	Slight
Strontium oxide	Solid	Slight

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<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Strontium chloride	Solid	Slight
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None
Magnesium oxide	Solid	Slight if fresh fumes are inhaled

Disposal: Normal routine disposal

PISTOL ROCKET SIGNAL, MK 1 MOD 1

<u>Composition (green star)</u>		<u>Toxic Hazard</u>
Barium chlorate	84.7	Moderately severe if ingested or inhaled
Shellac	10.7	None
Dextrin	2.6	None
Rosin	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium chloride	Solid	Moderately severe if ingested or inhaled
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

<u>Composition (red star)</u>		<u>Toxic Hazard</u>
Potassium chlorate	62.4	Moderately severe if ingested or inhaled
Strontium nitrate	18.8	Moderately severe if ingested or inhaled
Shellac	14.8	None
Dextrin	2.2	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Potassium chloride	Solid	Slight
Strontium oxide	Solid	Slight
Strontium chloride	Solid	Slight
Carbon dioxide	Gas	None
Nitrogen	Gas	None

Disposal: Normal routine disposal

Composition (white star)Toxic Hazard

Barium nitrate	74.0	Moderately severe if ingested or inhaled
Potassium nitrate	1.7	Slight
Antimony sulfide	3.3	Moderately severe if ingested or inhaled
Aluminum powder	13.3	Slight if inhaled
Sulfur	6.6	None
Dextrin	4.5	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Potassium hydroxide	Solid	Slight
Antimony pentoxide	Solid	Moderately severe if ingested or inhaled
Aluminum oxide	Solid	None
Sulfur dioxide	Gas	None

Disposal: Normal routine disposal

PISTOL ROCKET SIGNAL, MK 1 MOD 3
(SHOWER)

Composition (red)Toxic Hazard

Potassium perchlorate	40.0	Moderately severe if ingested or inhaled
Strontium nitrate	16.0	Moderately severe if ingested or inhaled
Hexachlorobenzene	10.0	Severe if ingested or inhaled
Magnesium powder	33.0	Slight if inhaled or received through the skin
Asphaltum	12.0	None
Dextrin	3.0	None
Castor oil	1.0	None
Linseed oil	3.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Potassium chloride	Solid	Slight
Strontium chloride	Solid	Slight
Strontium oxide	Solid	Slight
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

Composition (green)Toxic Hazard

Barium nitrate	50.0	Moderately severe if ingested or inhaled
Potassium perchlorate	10.0	Moderately severe if ingested or inhaled
Hexachlorobenzene	14.0	Severe if ingested or inhaled
Magnesium powder	18.0	Slight if inhaled or received through the skin
Copper powder	3.0	Slight
Asphaltum	3.0	None
Dextrin	2.0	None
Castor oil	1.0	None
Linseed oil	3.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Barium chloride	Solid	Moderately severe if ingested or inhaled
Potassium chloride	Solid	Slight
Magnesium oxide	Gas	Slight if fresh fumes are inhaled
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

Composition (white)Toxic Hazard

Barium nitrate	70.7	Moderately severe if ingested or inhaled
Potassium nitrate	1.6	Slight
Antimony sulfide	3.3	Slight
Aluminum powder	13.3	Slight if inhaled
Sulfur	6.6	None
Dextrin	4.5	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Antimony oxide	Solid	Slight
Aluminum oxide	Solid	None
Sulfur dioxide	Gas	None
Carbon dioxide	Gas	None

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

**PISTOL ROCKET SIGNAL, MK 2
(YELLOW SMOKE)**

<u>Composition</u>		<u>Toxic Hazard</u>
Auramine O	52.0	Moderately severe if ingested or inhaled
Potassium chlorate	27.3	Moderately severe if ingested or inhaled
Lactose	20.8	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Auramine O	Solid	Moderately severe if ingested or inhaled
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None

<u>Alternate Composition</u>		<u>Toxic Hazard</u>
Auramine O	20.0	Moderately severe if ingested or inhaled
Smoke Yellow I (naphthalene azo dimethylaniline)	44.0	
Potassium chlorate	28.0	Moderately severe if ingested or inhaled
Asbestos shorts	12.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Dyes	Solid	Moderately severe if ingested or inhaled
Potassium chloride	Solid	Slight
Asbestos	Solid	None
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

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PISTOL ROCKET SIGNAL, MK 2 MOD 0
(BLACK SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Hexachloroethane	50.0	Moderately severe if ingested or inhaled
Anthracene	4.1	Very slight if ingested
Alpna-naphthol	16.7	Moderately severe if ingested or inhaled
Magnesium powder	10.7	Slight temporary if inhaled or received through the skin
Potassium nitrate	9.4	Moderately severe if ingested or inhaled
Charcoal	5.7	None
Sulfur	3.1	None
Dextrin	0.5	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Magnesium chloride	Solid	Very slight if ingested or inhaled
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Potassium chloride	Solid	None
Carbon	Solid	None
Hydrogen chloride	Gas	Slight corrosive effect on skin or mucous membranes
Carbon dioxide	Gas	None
Nitrogen	Gas	None

Disposal: Normal routine disposal

PISTOL ROCKET SIGNAL, MK 2 MOD 0
(RED SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Cyclo Red (A-32)	61.6	
Potassium chlorate	23.0	Moderately severe if ingested or inhaled
Lactose	15.4	None

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Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Cyclo Red	Solid	
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

PISTOL ROCKET SIGNAL, MK 2 MOD 0
(GREEN SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Alizarine green	33.3	
Auramine O	9.5	Slight
Potassium chlorate	28.6	Moderately severe if ingested or inhaled
Lactose	19.0	None
Sodium bicarbonate	9.5	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Alizarine green	Solid	
Auramine O	Solid	Slight
Potassium chloride	Solid	Slight
Sodium carbonate	Solid	Moderately severe as irritant if ingested or inhaled
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

PISTOL ROCKET SIGNAL, MK 2 MOD 0
(YELLOW SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Auramine O	50.0	Moderately severe if ingested or inhaled
Potassium chlorate	30.0	Moderately severe if ingested or inhaled
Lactose	20.0	None

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Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Auramine O	Solid	Moderately severe if ingested or inhaled
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

PISTOL ROCKET SIGNAL, MK 2 MOD 1
(BLACK SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Hexachloroethane	55.0	Moderately severe if ingested or inhaled
Anthracene	26.0	Very slight if ingested
Magnesium powder	19.0	Slight temporary if inhaled or received through the skin

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Magnesium chloride	Solid	Very slight if ingested or inhaled
Carbon	Solid	None
Carbon monoxide	Gas	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

PISTOL ROCKET SIGNAL, MK 2 MOD 1
(GREEN SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Alizarine Green	54.1	
Potassium chlorate	24.3	Moderately severe if ingested or inhaled
Lactose	21.6	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Alizarine green	Solid	
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

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PISTOL ROCKET SIGNAL, MK 2 MOD 1
(ORANGE SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
HV Orange B	64.5	
Potassium chlorate	22.6	Moderately severe if ingested or inhaled
Lactose	12.9	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
HV Orange B	Solid	
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

PISTOL ROCKET SIGNAL, MK 2 MOD 1
(RED SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Smoke Red D (T-nitrobenzene-azo- β -naphthol tetraethyl diamine-o-carboxy phenyl xanthenyl chloride)	50.0	
Potassium chlorate	19.0	Moderately severe if ingested or inhaled
Lactose	14.0	None
Asbestos shorts	17.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Smoke Red D	Solid	
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

Alternate CompositionToxic Hazard

Anthraquinone Red	50.0	Slight
Potassium chlorate	19.0	Moderately severe if ingested or inhaled
Lactose	14.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Anthraquinone Red	Solid	Slight
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

PISTOL ROCKET SIGNAL, MK 2 MOD 1
(VIOLET SMOKE)

CompositionToxic Hazard

Violet anthraquinone	64.5	
Lactose	12.9	None
Potassium chlorate	22.6	Moderately severe if ingested or inhaled

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Violet anthraquinone	Solid	
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

PISTOL ROCKET SIGNAL, MK 3 MOD 0
(SHOWER, WHITE)

CompositionToxic Hazard

Barium nitrate	70.8	Moderately severe if ingested or inhaled
Potassium nitrate	1.5	Moderately severe if ingested or inhaled
Antimony trisulfide	3.1	Slight
Aluminum powder	13.1	Slight if inhaled
Sulfur	6.2	None
Dextrin	5.4	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Potassium hydroxide	Solid	Slight
Aluminum oxide	Solid	None
Antimony pentasulfide	Solid	Slight
Sulfur dioxide	Gas	None
Nitrogen dioxide	Gas	Severe if inhaled in quantity
Nitrogen	Gas	None
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

PRACTICE BOMB SIGNAL, MK 4 MOD 3

<u>Composition</u>		<u>Toxic Hazard</u>
Phosphorus, red	100	Moderately severe if ingested or inhaled

Probable Principal Products or Residues

<u>Material</u>	<u>Solid</u>	<u>Toxic Hazard</u>
Phosphorus, red	Solid	Moderately severe if ingested or inhaled
Phosphorus, white	Solid	Highly toxic if ingested or absorbed; only small amounts formed but may re-ignite spontaneously
Phosphorus pentoxide	Solid	Moderately severe as caustic irritant to skin and mucous membranes

Disposal: Any items which are damaged or any remains after accidental burning should be disposed of by sinking at sea or by burial in an area suitable for such disposition. Avoid handling such items with bare hands. Any damaged or burned, or partially burned signals must be stored in metal fireproof cans until final disposition. Since the signal contains an explosive charge, in addition to phosphorus, disposition by incineration should not be attempted unless a suitable barricaded burning pit is available.

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PRACTICE BOMB SIGNAL, MK 4 MOD 4

<u>Composition</u>		<u>Toxic Hazard</u>
Zinc oxide	100	Slight if ingested or inhaled

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Zinc oxide	Solid	Slight if ingested or inhaled

Disposal: No special problems of corrosive or toxic substances but the cartridge contains an explosive charge and must be handled according to appropriate instructions for explosive loaded items.

PRACTICE BOMB SIGNAL, MK 5

<u>Composition</u>		<u>Toxic Hazard</u>
Uranine	100	Toxicity not fully known, but hazard is probably slight

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Uranine	Dye	Toxicity not fully known, but hazard is probably slight

Disposal: Defective or damaged signals may be disposed of by dumping or burning.

SINGLE STAR SIGNAL, MK 5
(GREEN FLARE)

<u>Composition</u>		<u>Toxic Hazard</u>
Barium chlorate	86.0	Severe if ingested or inhaled
Shellac	11.0	None
Rosin	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium chloride	Solid	Moderately severe if ingested or inhaled
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

SINGLE STAR SIGNAL, MK 5
(RED FLARE)

<u>Composition</u>		<u>Toxic Hazard</u>
Potassium chlorate	63.0	Moderately severe if ingested or inhaled
Strontium nitrate	19.5	Moderately severe if ingested or inhaled
Shellac	15.5	None
Rosin	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Potassium chloride	Solid	Slight
Strontium oxide	Solid	Slight
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

SINGLE STAR SIGNAL, MK 5
(YELLOW FLARE)

<u>Composition</u>		<u>Toxic Hazard</u>
Barium nitrate	64.0	Moderately severe if ingested or inhaled
Potassium perchlorate	12.0	Moderately severe if ingested or inhaled
Aluminum powder	19.0	Slight if inhaled
Sulfur	5.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Barium chloride	Solid	Moderately severe if ingested or inhaled

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<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Potassium chloride	Solid	Slight
Aluminum oxide	Solid	Slight if inhaled
Sulfur dioxide	Gas	Slight
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

SMOKE AND ILLUMINATION SIGNAL, MK 55

<u>Composition</u>		<u>Toxic Hazard</u>
Red phosphorus	52	(See AIRCRAFT FLOAT LIGHT for
Manganese dioxide	36	Toxic Hazard and all other informa-
Zinc oxide	3	tion)
Magnesium	8	
Linseed oil	3	

SMOKE OR ILLUMINATION SIGNAL, MK 38 MOD 0
(GREEN)

<u>Composition (smoke)</u>		<u>Toxic Hazard</u>
Dye, green, Mil-D-3709	58.8	Moderately severe if ingested or inhaled
Potassium chlorate	19.3	Moderately severe if ingested or inhaled
Sugar	13.2	None
Graphite	2.0	None
Asbestos floats	6.7	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Dye, green	Solid	Moderately severe if ingested or inhaled
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None
Asbestos	Solid	None

Disposal: Normal routine disposal

<u>Composition (flare)</u>		<u>Toxic Hazard</u>
Barium nitrate	50.0	Moderately severe if ingested or inhaled
Potassium perchlorate	10.0	Moderately severe if ingested or inhaled
Magnesium powder	20.0	Slight temporary if inhaled or received through the skin
Polyvinyl chloride	16.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Barium chloride	Solid	Moderately severe if ingested or inhaled
Potassium chloride	Solid	None
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

SUBMARINE EMERGENCY IDENTIFICATION SIGNAL, MK 3 MOD 2
(GREEN FLARE)

<u>Composition</u>		<u>Toxic Hazard</u>
Barium nitrate	53.0	Moderately severe if ingested or inhaled
Potassium perchlorate	8.0	Moderately severe if ingested or inhaled
Hexachlorobenzene	12.0	Moderately severe if ingested or inhaled
Magnesium powder	21.0	Slight temporary if inhaled or received through the skin
Asphaltum	3.0	Very slight as a skin irritant
Copper powder	2.0	Slight if ingested or inhaled
Linseed oil	1.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium chloride	Solid	Moderately severe if ingested or inhaled
Barium oxide	Solid	Moderately severe if ingested or inhaled
Potassium chloride	Solid	Slight
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Copper oxide	Solid	Slight if ingested or inhaled

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<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

SUBMARINE EMERGENCY IDENTIFICATION SIGNAL, MK 3 MOD 3
(RED FLARE)

<u>Composition</u>		<u>Toxic Hazard</u>
Strontium nitrate	34.0	Moderately severe if ingested or inhaled
Potassium perchlorate	21.0	Moderately severe if ingested or inhaled
Hexachlorobenzene	6.0	Severe if ingested or inhaled
Magnesium powder	34.0	Slight temporary if inhaled or received through the skin
Asphaltum	5.0	Slight

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Strontium oxide	Solid	Moderately severe if ingested or inhaled
Strontium chloride	Solid	Moderately severe if ingested or inhaled
Potassium chloride	Solid	None
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

SUBMARINE EMERGENCY IDENTIFICATION SIGNAL, MK 41
(YELLOW FLARE)

<u>Composition</u>		<u>Toxic Hazard</u>
Magnesium	33	Slight if inhaled or received through the skin
Aluminum	8	Slight if inhaled
Barium nitrate	42	Moderately severe if ingested or inhaled
Sodium oxalate	10	Moderately severe if ingested or inhaled
Hexachlorobenzene	5	Severe if ingested or inhaled
Linseed oil	2	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Barium oxide	Solid	Moderately severe if ingested or inhaled
Aluminum oxide	Solid	Slight
Magnesium chloride	Solid	None
Sodium carbonate	Solid	Slight
Carbon dioxide	Gas	None
Nitrogen	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled

Disposal: Normal routine disposal

SUBMARINE EMERGENCY IDENTIFICATION SIGNAL, MK 45
(GREEN FLARE)

<u>Composition</u>		<u>Toxic Hazard</u>
Magnesium	21	Slight if inhaled or received through the skin
Barium nitrate	53	Moderately severe if ingested or inhaled
Hexachlorobenzene	12	Severe if ingested or inhaled
Potassium perchlorate	8	Moderately severe if ingested or inhaled
Copper powder	2	Slight
Asphaltum	3	None
Linseed oil	1	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Magnesium chloride	Solid	None
Potassium chloride	Solid	Slight
Copper oxide	Solid	None
Carbon dioxide	Gas	None
Nitrogen	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled

Disposal: Normal routine disposal

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SUBMARINE EMERGENCY IDENTIFICATION SIGNAL, MK 46
(RED FLARE)

<u>Composition</u>		<u>Toxic Hazard</u>
Strontium nitrate	34	Moderately severe if ingested or inhaled
Magnesium	34	Slight if inhaled or received through the skin
Potassium perchlorate	19	Moderately severe if ingested or inhaled
Hexachlorobenzene	6	Severe if ingested or inhaled
Asphaltum	5	None
Linseed oil	2	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Strontium oxide	Solid	Slight
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Potassium chloride	Solid	Slight
Magnesium chloride	Solid	None
Carbon dioxide	Gas	None
Nitrogen	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled

Disposal: Normal routine disposal

SUBMARINE FLOAT SIGNAL, MK 2 MOD 2
(BLACK)

<u>Composition</u>		<u>Toxic Hazard</u>
Hexachloroethane	55.0	Moderately severe if ingested or inhaled
Anthracene	26.0	Slight if ingested
Magnesium	19.0	Slight temporary if inhaled or received through the skin

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Magnesium chloride	Solid	Very slight if ingested or inhaled
Carbon dioxide	Gas	None
Carbon	Solid	None
Hydrogen chloride	Gas	Slight corrosive effect on skin or mucous membranes

Disposal: Normal routine disposal

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SUBMARINE FLOAT SIGNAL, MK 2 MOD 2
(GREEN SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Auramine O	21.0	Moderately severe if ingested or inhaled
Indigo	35.0	
Potassium chlorate	33.0	Moderately severe if ingested or inhaled
Lamp black	11.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Auramine O	Solid	Moderately severe if ingested or inhaled
Indigo	Solid	
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

<u>Alternate Composition</u>		<u>Toxic Hazard</u>
Alizarine green	58.0	
Potassium chlorate	25.0	Moderately severe if ingested or inhaled
Lactose	10.0	None
Asbestos shorts	7.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Alizarine green	Solid	
Potassium chloride	Solid	Slight if ingested
Asbestos	Solid	None
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

<u>Alternate Composition No. 2</u>		<u>Toxic Hazard</u>
Green dye, Mil-D-3709	40.0	Moderately severe if ingested or inhaled
Potassium chlorate	29.0	Moderately severe if ingested or inhaled
Sugar	24.0	None
Sodium bicarbonate	4.0	None

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<u>Composition</u>		<u>Toxic Hazard</u>
Sil-o-cel	4.0	None
Cellulose nitrate- camphor	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Green dye	Solid	Moderately severe if ingested or inhaled
Potassium chloride	Solid	Slight if ingested
Sodium carbonate	Solid	Moderately severe as irritant to the skin or mucous membranes
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

SUBMARINE FLOAT SIGNAL, MK 2 MOD 2
(YELLOW SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Auramine O	54.0	Moderately severe if ingested or inhaled
Flaming Red No. 1	6.0	
Potassium chlorate	30.0	Moderately severe if ingested or inhaled
Lamp black	10.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Auramine O	Solid	Moderately severe if ingested or inhaled
Flaming Red No. 1	Solid	
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	

<u>Alternate Composition</u>		<u>Toxic Hazard</u>
Smoke Yellow I	27.0	
Potassium chlorate	42.0	Moderately severe if ingested or inhaled
Lactose	19.0	None
Asbestos shorts	12.0	None

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Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Smoke yellow	Solid	
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

SUBMARINE FLOAT SIGNAL, MK 2 MOD 2
(RED SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Smoke Red D (T-nitrobenzene- azo- β -naphthol tetraethyl-diamine- o-carboxy phenyl xanthenyl chloride)	50.0	
Potassium chlorate	19.0	Moderately severe if ingested or inhaled
Lactose	14.0	None
Asbestos shorts	17.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Smoke Red D	Solid	
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

SUBMARINE IDENTIFICATION FLARE, MK 11 AND MK 12
(GREEN FLARE)

<u>Composition (flare)</u>		<u>Toxic Hazard</u>
Barium chlorate	87	Severe if ingested or inhaled
Shellac	11	None
Rosin	2	None

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<u>Composition (blinker)</u>		<u>Toxic Hazard</u>
Potassium nitrate	68	Moderately severe if ingested or inhaled
Willow charcoal	20	None
Rosin	9	None
Castor oil	1.5	None
Linseed oil	1.5	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium chloride	Solid	Moderately severe if ingested or inhaled
Barium oxide	Solid	Moderately severe if ingested or inhaled
Carbon dioxide	Gas	None
Potassium carbonate	Solid	Slight to moderately severe if ingested or inhaled
Carbon dioxide	Gas	None
Nitrogen	Gas	None

Disposal: Normal routine disposal

SUBMARINE IDENTIFICATION FLARE, MK 11 AND MK 12
(RED FLARE)

<u>Composition (flare)</u>		<u>Toxic Hazard</u>
Strontium nitrate	45.0	Moderately severe if ingested or inhaled
Potassium perchlorate	25.0	Moderately severe if ingested or inhaled
Magnesium powder	17.5	Slight temporary if inhaled or received through the skin
Gilsonite (asphaltum)	7.5	None
Polyvinyl chloride	5.0	None

<u>Composition (blinker)</u>		<u>Toxic Hazard</u>
Potassium chlorate	68	Moderately severe if ingested or inhaled
Willow charcoal	20	None
Rosin	9	None
Castor oil	1.5	None
Linseed oil	1.5	None

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Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Strontium oxide	Solid	Moderately severe if ingested or inhaled
Strontium chloride	Solid	Moderately severe if ingested or inhaled
Potassium carbonate	Solid	Slight to moderately severe if ingested or inhaled
Potassium chloride	Solid	None
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

SUBMARINE IDENTIFICATION FLARE, MK 11 AND MK 12
(YELLOW FLARE)

<u>Composition (flare)</u>		<u>Toxic Hazard</u>
Barium nitrate	64.0	Moderately severe if ingested or inhaled
Sodium oxalate	10.0	Moderately severe if ingested or inhaled
Aluminum powder	3.5	None
Aluminum grain	15.5	Very slight if inhaled
Sulfur	5.0	None
Castor oil	2.0	None

<u>Composition (blinker)</u>		<u>Toxic Hazard</u>
Potassium nitrate	68	Moderately severe if ingested or inhaled
Willow charcoal	20	None
Rosin	9	None
Castor oil	1.5	None
Linseed oil	1.5	None

Probable Principal Products or Residues

<u>Materials</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Aluminum oxide	Solid	Very slight if inhaled
Potassium carbonate	Solid	Slight to moderately severe if ingested or inhaled
Sodium carbonate	Solid	Slight to moderately severe if ingested or inhaled

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Sulfur dioxide	Gas	None
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

SUBMARINE LOCATION MARKER, MK 21
(RED SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Red dye, 1-Methyl- aminoanthra- quinone	48.0	Slight
Potassium chlorate	30.0	Moderately severe if ingested or inhaled
Sugar	22.0	None
Sodium bicarbonate	4.0	None
Sil-o-cel	12.0	None
Binder solution	35.0	Slight

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Methylamino- anthraquinone	Solid	Slight
Potassium chloride	Solid	Slight
Sodium carbonate	Solid	Slight
Silicon dioxide	Solid	None
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

SUBMARINE LOCATION MARKER, MK 22
(YELLOW SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Auramine hydro- chloride	20.0	Moderately severe if ingested or inhaled
Potassium chlorate	14.0	Moderately severe if ingested or inhaled
Charcoal	10.0	None
Sodium bicarbonate	2.5	None

<u>Composition</u>		<u>Toxic Hazard</u>
Sil-o-cel	5.0	None
Binder solution	18.0	Slight

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Auramine hydrochloride	Solid	Moderately severe if ingested or inhaled
Potassium chloride	Solid	Slight
Sodium carbonate	Solid	Slight
Silicon dioxide	Solid	None
Carbon dioxide	Gas	None

Disposal: Normal routine disposalSUBMARINE LOCATION MARKER, MK 23
(GREEN SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Dye, green, Mil-D-3709 (Auramine hydrochloride 27.3-31.3% 1, 4-dip-toluidinoanthraquinone 68.7-72.7%)	40	Moderately severe if ingested or inhaled
Sugar	24.0	None
Potassium chlorate	29.0	Moderately severe if ingested or inhaled
Sodium bicarbonate	4.0	None
Sil-o-cel	4.0	None
Binder (8% sol. of nitrocellulose in acetone)	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Green dye	Solid	Moderately severe if ingested or inhaled
Potassium chloride	Solid	Slight
Sodium carbonate	Solid	Slight irritant effect if ingested or inhaled
Silicon dioxide	Solid	None
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

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SUBMARINE LOCATION MARKER, MK 24
(BLACK SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Magnesium	15.0	Slight temporary if inhaled or received through the skin
Anthracene	22.5	Very slight if ingested
Hexachloroethane	63.0	Moderately severe if ingested or inhaled

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Magnesium chloride	Solid	Very slight if ingested or inhaled
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Carbon	Gas	None
Hydrogen chloride	Gas	Slight corrosive effect on skin or mucous membranes
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

SUBMARINE LOCATION MARKER, MK 26 MOD 0
(YELLOW FLAME-WHITE SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Red phosphorus	52	Moderately severe if ingested or inhaled
Manganese dioxide	36	Moderately severe if ingested or inhaled
Zinc oxide	3	None
Magnesium powder	8	None
Linseed oil	3	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Red phosphorus	Solid	Slight
White phosphorus	Solid	Highly toxic if ingested or absorbed-only small amounts formed but these may ignite spontaneously
Phosphorus pentoxide	Smoke	Moderately severe as caustic irritant to skin and mucous membranes
Manganous oxide	Solid	Slight
Manganese	Solid	Slight

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Magnesium oxide	Solid	Slight
Zinc oxide	Solid	None

Disposal: Any items which are damaged or any remains after accidental burning should be disposed of by sinking at sea or by thorough incineration. Avoid handling such items with bare hands. Any damaged or partially burned signals must be stored in metal fireproof cans until final disposition.

SUBMARINE SMOKE AND ILLUMINATION SIGNAL MK 51 MOD 0
(RED FLARE AND SMOKE)

<u>Composition (flare)</u>		<u>Toxic Hazard</u>
Strontium nitrate	40.0	Moderately severe if ingested or inhaled
Potassium perchlorate	25.0	Moderately severe if ingested or inhaled
Magnesium powder	20.0	Slight temporary if inhaled or received through the skin
Polyvinyl chloride	10.0	None
Laminac 4116	5.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Strontium oxide	Solid	Moderately severe if ingested or inhaled
Strontium chloride	Solid	Moderately severe if ingested or inhaled
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Potassium chloride	Solid	None
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

<u>Composition (smoke)</u>		<u>Toxic Hazard</u>
Methylaminoanthraquinone	48	Slight
Potassium chlorate	35	Moderately severe if ingested or inhaled
Sugar	24	None
Sodium bicarbonate	6	None
Sil-o-cel	10	None
Nitrocellulose-camphor	2.5	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Methylarinoanthra-quinone	Solid	Slight
Potassium chloride	Solid	Slight
Sodium carbonate	Solid	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

SUBMARINE SMOKE AND ILLUMINATION SIGNAL, MK 52 MOD 0
(GREEN FLARE AND SMOKE)

<u>Composition (flare)</u>		<u>Toxic Hazard</u>
Barium nitrate	14	Moderately severe if ingested or inhaled
Potassium perchlorate	45	Moderately severe if ingested or inhaled
Copper powder	6	Moderately severe if ingested or inhaled
Magnesium powder	20	Slight temporary if inhaled or received through the skin
Polyvinyl chloride	10	None
Laminac 4116	5	None

Probable Principal Products or Residues

<u>Materials</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Barium chloride	Solid	Moderately severe if ingested or inhaled
Potassium chloride	Solid	None
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Copper oxide	Solid	Moderately severe if ingested or inhaled
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

<u>Composition (smoke)</u>		<u>Toxic Hazard</u>
Dye, green, Mil-D-3709 Auramine hydrochloride 27.3-31.3%, 1, 4-di-p-toluidinoanthra-quinone 68.7-72.2%	20	Moderately severe if ingested or inhaled

Composition (smoke)Toxic Hazard

Potassium chlorate	29.0	Moderately severe if ingested or inhaled
Sugar	24.0	None
Sodium bicarbonate	4.0	None
Sil-o-cel	4.0	None
Binder, Mil-B-10854	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Dye, green	Solid	Moderately severe if ingested or inhaled
Potassium chloride	Solid	Slight
Sodium carbonate	Solid	None
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

SUBMARINE SMOKE AND ILLUMINATION SIGNAL, MK 53 MOD 0
(YELLOW FLARE AND SMOKE)

Composition (flare)Toxic Hazard

Potassium perchlorate	35.0	Moderately severe if ingested or inhaled
Sodium oxalate	19.0	Severe if ingested or inhaled
Magnesium powder	30.0	Slight if inhaled or received through the skin
Polyvinyl Chloride	10.0	None
Laminac 4116	5.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Potassium chloride	Solid	Slight
Sodium chloride	Solid	None
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Carbon dioxide	Gas	None
Nitrogen	Gas	None

Composition (smoke)Toxic Hazard

Auramine hydrochloride	40	Moderately severe if ingested or inhaled
Potassium chlorate	29	Moderately severe if ingested or inhaled
Sugar	24	None

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<u>Composition</u>		<u>Toxic Hazard</u>
Sodium bicarbonate	5	None
Sil-o-cel	5	None
Nitrocellulose-	2.5	None
Camphor Binder		

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Auramine hydro-chloride	Solid	Moderately severe if ingested or inhaled
Potassium chloride	Solid	Slight
Sodium carbonate	Solid	Very slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

SUBMARINE TARGET SIGNAL, MK 15
(WHITE SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Hexachloroethane	44.0	Moderately severe if ingested or inhaled
Zinc oxide	44.0	Moderately severe if ingested or inhaled
Calcium silicide	10.0	None
Magnesium carbonate	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Zinc chloride	Solid	Severe if ingested or inhaled
Zinc oxide	Solid	Inhalation of fresh fumes may be hazardous
Hydrogen chloride	Gas	Irritant effect on the skin or mucous membranes
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

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TARGET IDENTIFICATION BOMB, MK 72 MOD 1
(ORANGE SMOKE)

<u>Composition</u>		<u>Toxic Hazard</u>
Fire Orange Smoke dye	68.0	
Potassium chlorate	12.0	Moderately severe if ingested or inhaled
Lactose	15.0	None
Asbestos shorts	5.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Fire Orange dye	Solid	
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None

Disposal: Normal routine disposal

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TARGET ROCKET FLARE, MK 1 MOD 1

<u>Composition</u>		<u>Toxic Hazard</u>
Barium nitrate	67.0	Moderately severe if ingested or inhaled
Sodium oxalate	17.0	Moderately severe if ingested or inhaled
Aluminum powder	2.0	None
Aluminum grain	2.0	None
Magnesium powder	7.0	Very slight if inhaled or received through the skin
Sulfur	5.0	None
Castor oil	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Sodium hydroxide	Solid	Very slight corrosive effect on skin or mucous membranes
Aluminum oxide	Solid	None
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Sulfur dioxide	Gas	Slight
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

TRACER, MK 21 MOD 0

<u>Composition</u>		<u>Toxic Hazard</u>
<u>Ignition Comp. (1 gm)</u>		
Lead thiocyanate	32	Moderately severe if ingested or inhaled
Potassium perchlorate	40	Moderately severe if ingested or inhaled
Charcoal	18	None
Egyptian lacquer	10	Slight
<u>First Fire Comp. (0.5 gm)</u>		
Barium peroxide	42.5	Moderately severe if ingested or inhaled
Magnesium	5.0	None
Aluminum	2.5	None
Black powder	50.0	Slight

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<u>Composition</u>		<u>Toxic Hazard</u>
<u>Tracer Comp. (2.5 g)</u>		
Magnesium	62	Slight if inhaled or received through the skin
Sodium nitrate	32.7	Moderately severe if ingested or inhaled
Laminac	98.96	
Lupersol DDM	0.94 5.3	Slight
Cobalt naphthenate	0.1	

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Lead oxide	Solid	Moderately severe if ingested or inhaled
Potassium chloride	Solid	Slight
Barium oxide	Solid	Moderately severe if ingested or inhaled
Magnesium oxide	Solid	Slight
Sodium hydroxide	Solid	Moderately severe corrosive action on skin and mucous membranes
Carbon dioxide	Gas	None
Sulfur dioxide	Gas	Slight
Nitrogen	Gas	None
Nitric oxide	Gas	Moderately severe if inhaled

Disposal: Normal routine disposal

TRACKING FLARE, MK 21 MOD 0

<u>Composition</u>		<u>Toxic Hazard</u>
<u>Ignition Comp.</u>		
Lead thiocyanate	32.0	Moderately severe if ingested or inhaled
Potassium perchlorate	40.0	Moderately severe if ingested or inhaled
Charcoal	18.0	None
Egyptian lacquer	10.0	Slight
<u>First Fire Comp. (5 gm)</u>		
Barium peroxide	42.5	Moderately severe if ingested or inhaled
Magnesium	5.0	None
Aluminum powder	2.5	None
Black powder	50.0	Slight

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Composition

Toxic Hazard

Flare Composition (5 gm)

Barium peroxide	42.5	Moderately severe if ingested or inhaled
Magnesium	5.0	None
Aluminum powder	2.5	None
Black powder	50.0	Slight

Flare Composition (105 gm)

Magnesium	56.0	Slight if inhaled or received through the skin
Sodium nitrate	34.0	Moderately severe if ingested or inhaled
Polyvinyl chloride	2.0	None
Laminac 98.0	4.0	None
Lupersol DDM 2.0	4.0	None
Styrene monomer	4.0	Slight

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Lead oxide	Solid	Moderately severe if ingested or inhaled
Potassium chloride	Solid	Slight
Barium oxide	Solid	Moderately severe if ingested or inhaled
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Sodium hydroxide	Solid	Moderately severe corrosive action on skin and mucous membranes
Carbon dioxide	Gas	None
Sulfur dioxide	Gas	Slight
Nitrogen	Gas	None
Nitric oxide	Gas	Moderately severe if inhaled

Disposal: Normal routine disposal

TRACKING FLARE, MK 23 MOD 0

Composition

Toxic Hazard

Magnesium	48	Slight if inhaled or received through the skin
Strontium nitrate	24	Moderately severe if ingested or inhaled
Potassium nitrate	15	Moderately severe if ingested or inhaled
Hexachlorobenzene	10	Severe if ingested or inhaled
Laminac	3	None

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Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Strontium oxide	Solid	Slight
Magnesium chloride	Solid	None
Potassium carbonate	Solid	Slight
Carbon dioxide	Gas	None
Nitrogen	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled

Disposal: Normal routine disposal

TRACKING FLARE, MK 25 MOD 0

<u>Composition</u>		<u>Toxic Hazard</u>
Sodium nitrate	35	Moderately severe if ingested or inhaled
Magnesium	35	Slight if inhaled or received through the skin
Hexachlorobenzene	10	Severe if ingested or inhaled
Potassium nitrate	15	Moderately severe if ingested or inhaled
Binder (rosin)	5	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Sodium hydroxide	Solid	Moderately severe if ingested or inhaled - corrosive effect on skin or mucous membranes
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Sodium chloride	Solid	None
Potassium chloride	Solid	Slight
Carbon dioxide	Gas	None
Nitrogen	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled

Disposal: Normal routine disposal

TRACKING FLARE, MK 27 MOD 0

<u>Composition</u>		<u>Toxic Hazard</u>
<u>Ignition Comp. (14 gm)</u>		
Barium chromate	85.5	Moderately severe if ingested or inhaled
Boron	9.5	Moderately severe if ingested or inhaled
Calcium stearate	5.0	None
<u>First Fire Comp. (10 gm)</u>		
Barium peroxide	42.5	Moderately severe if ingested or inhaled
Magnesium	5.0	Slight
Aluminum	2.5	None
Black powder	50.0	Slight
<u>Low Intensity Flare Comp. (75 gm)</u>		
Strontium nitrate	27.5	Moderately severe if ingested or inhaled
Magnesium	39.0	Slight if inhaled or received through the skin
Hexachlorobenzene	10.0	Moderately severe if ingested or inhaled
Potassium nitrate	18.5	Moderately severe if ingested or inhaled
Laminac-Lupersol	5.0	Slight
DDM		
<u>High Intensity Flare Comp. (270 gm)</u>		
Strontium nitrate	22.5	Moderately severe if ingested or inhaled
Sodium nitrate	22.5	Moderately severe if ingested or inhaled
Magnesium	50.0	Slight if inhaled or received through the skin
Laminac-Lupersol	5.0	Slight
DDM		

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Boron oxide	Solid	Moderately severe if ingested or inhaled
Chronic oxide	Solid	Moderately severe if ingested or inhaled
Magnesium oxide	Solid	Slight if fresh fumes are inhaled
Strontium oxide	Solid	Slight
Potassium hydroxide	Solid	Moderately severe corrosive action on skin and mucous membranes
Sodium hydroxide	Solid	Moderately severe corrosive action on skin and mucous membranes
Carbon dioxide	Gas	None

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Nitric oxide	Gas	Moderately severe if ingested or inhaled
Nitrogen	Gas	None

Disposal: Normal routine disposal

TRACKING FLARE, MK 29 MOD 0

<u>Component</u>	<u>Weight (%)</u>	<u>Toxic Hazard</u>
<u>Prime Mixture (3-1)</u>		
Barium chromate	90	Moderately severe if ingested or inhaled
Boron	10	Moderately severe if ingested or inhaled
<u>First Fire Comp.</u>		
Magnesium	40	Slight if inhaled or received through the skin
Barium chromate	60	Moderately severe if ingested or inhaled
Vistanex L-100	3	None
<u>Fluorinant Comp. (100 g)</u>		
Sodium nitrate	37	Moderately severe if ingested or inhaled
Magnesium	58	Slight if inhaled or received through the skin
Vistanex L-100	5	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Boric oxide	Solid	Moderately severe if ingested or inhaled
Magnesium oxide	Solid	Slight, if fresh fumes are inhaled
Chromium oxide	Solid	Moderately severe if ingested or inhaled
Sodium hydroxide	Solid	Moderately severe corrosive action on skin and mucous membranes
Carbon dioxide	Gas	None
Nitrogen	Gas	None
Nitric oxide	Gas	Moderately severe if inhaled

Disposal: Normal routine disposal

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TRIP WIRE FLARE, MK 1 MOD 0

<u>Composition</u>		<u>Toxic Hazard</u>
Barium nitrate	64.0	Moderately severe if ingested or inhaled
Sodium oxalate	10.0	Moderately severe if ingested or inhaled
Aluminum, grain	15.5	Very slight if inhaled
Aluminum, powder	3.5	Very slight if inhaled
Sulfur	5.0	None
Castor oil	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Sodium hydroxide	Solid	Very slight corrosive effect on skin or mucous membranes
Aluminum oxide	Solid	Very slight if inhaled
Sulfur dioxide	Gas	Slight
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen		None

Disposal: Normal routine disposal

OP 2793

TRIP WIRE FLARE, MK 1 MOD 0

<u>Composition</u>		<u>Toxic Hazard</u>
Barium nitrate	64.0	Moderately severe if ingested or inhaled
Sodium oxalate	10.0	Moderately severe if ingested or inhaled
Aluminum, grain	15.5	Very slight if inhaled
Aluminum, powder	5.5	Very slight if inhaled
Sulfur	5.0	None
Castor oil	2.0	None

Probable Principal Products or Residues

<u>Material</u>	<u>State</u>	<u>Toxic Hazard</u>
Barium oxide	Solid	Moderately severe if ingested or inhaled
Sodium hydroxide	Solid	Very slight corrosive effect on skin or mucous membranes
Aluminum oxide	Solid	Very slight if inhaled
Sulfur dioxide	Gas	Slight
Carbon dioxide	Gas	None
Nitrogen dioxide	Gas	Moderately severe if inhaled
Nitrogen		None

Disposal: Normal routine disposal

