Talk - All-Ohio Safety Congress
April 18, 1944

OUTLINE

MEDICAL ASPECTS OF THE WARTIME HANDLING OF GASOLINE

I. Wartime changes in product and technique of handling

1. Changes in composition of gasoline for military purposes
   (1) Limitation of specifications for simplicity of supply and uniform efficiency of operation of engines in all places and under all conditions (Gasoline furnishes 60% of problem of supply)
   (2) Alkylates, aromatics, increased lead content
   (3) Other materials

2. Changes in methods of handling gasoline
   (1) On part of producers and distributors
      (a) Drum filling, can filling - versus bulk
   (2) On part of persons engaged in transportation
      (a) Drums and cans in freight cars and on board ships - versus rail tank cars, barges and tankers
   (3) On part of handlers of product at destination
      (a) Handled by inexperienced people, to large degree under temporary, improvised conditions and often in haste, instead of under carefully prearranged and standardized conditions
      (b) Fortunately for most part, finally, by military personnel to whom orders and instructions can be issued, with considerable likelihood of obedience

3. Changes in uses to which gasoline is put
   (1) Increased use of aeronautical fuels, this requiring rigid specifications and very wide distribution on many types of craft (carriers) and in many widely distributed bases
   (2) Increased use of gasoline for cooking and heating
   (3) Miscellaneous uses dependent upon availability
      (a) Cleaning tools, fabrics, surfaces (including skin) under field army conditions
      (b) Testing aeronautical equipment, carburetors, etc.

4. Changes in manner of storing gasoline

   (1) Larger proportion of leaded gasoline in storage
   (2) Different containers - large dump of cans and drums
      (a) Terne plate for tin
      (b) Subsequent use of cans for many purposes

(3) Wider range of climatic conditions - especially with respect to cold

II. Hazards to life and health in handling gasoline

1. Fire and explosion

(1) Always so great that avoidance of this hazard has led to highly standardized methods of handling in peacetime to such an extent as largely to eliminate other health hazards

(2) Increased greatly by conditions of warfare
(a) By inexperienced and careless handling, and by emergency handling with haste and improvisations and vicissitudes of battle - supply at all costs as well as destruction in retreat
(b) By underground installations, and in structures closed up or surrounded by walls to prevent detection and to ward off worst effects of attack - bomb proof dumps
camouflaged plants, underground plants
blast and black-out precautions
(c) Temperature effects - heat-volatility
cold-static
Plants should be against severe cold.

2. Intoxication from exposure to vapors

(1) Origin of intoxication - taken too lightly
(a) Straight chain hydrocarbons versus aromatics
(b) Unknown toxicologic properties of complicated compounds produced by modern cracking and polymerization
(c) Changes toxicity due to reforming with increased concentrations of segregated base stocks of special composition - alkylates-aromatics
(d) New additives - present and future

(2) Limits of safe exposure
(a) Dependent upon length of exposure
(b) Dependent upon composition of vapors
(c) Results of current experience

(3) Acute and chronic intoxication

(4) Sequelae

3. Skin contact with motor fuels

(1) Possibility of absorption of toxic materials through skin