

DANYLO HALYTSKY LVIV NATIONAL MEDICAL UNIVERSITY

OBJECTIVE STRUCTURED PRACTICAL (CLINICAL) EXAMINATION

222 Medicine

the station 12 "HYGIENE, ORGANIZATION OF HEALTH CARE" discipline "Hygiene and ecology"

Situational task № 1

In the laboratory a new pesticide is studied. There were determined the following: median lethal doses are 861.5 mg/kg (white rats) and 1050 mg/kg (white mouse), accumulation coefficient is 2.0. Threshold concentration by perceptive criterion (odor in water) is 2.9 mg/l, threshold concentration by general sanitary criterion is 0.5 mg/l (biological oxygen demand stimulation), maximum non-effective dose is 0.09 mg/kg (in chronic experiment on the white rats by intragastric administration), maximum non-effective concentration is 0.16 mg/l (cutaneous - resorptive effect with water penetrating).

Situational task № 2

Acceptable daily intake of pesticide phosphamide with food in human organism is 0.42 mg. Phosphamide content in vegetables of industrial area is following: potatoes – 20 mg/kg, carrot – 30 mg/kg, lettuce – 30 mg/kg, and others – 50 mg/kg. Food ration of human includes: potatoes – 300 g, carrot – 10 g, lettuce – 100 g and other vegetables – 200 g.

Situational task № 3

Among the children population in one of city district increasing of respiratory diseases frequency is registered, especially chronic bronchitis and bronchial asthma. In 70 m from residential area the industrial factory (III level harmfulness) is located. According to laboratory results the actual concentrations of chemicals (mg/m³) in atmosphere air are: sulphur oxide – 1.5 (MAC – 0.5), carbon oxide – 0.05 (MAC – 5.0), nitrite dioxide – 0.17 (MAC – 0.085), phenol – 0.01 (MAC – 0.01).

Situational task № 4

In baby house food mixes are diluted by well water. The farm private stock with nitrite pesticides is located on 20 m from the well. The laboratory testing of the water sample showed the following results: smell and taste is 2 points, colour – 10 degrees, turbidity – 0.1 NU, hardness – 5 mmol /dm³, iron – 0.05 mg/dm³, lead – 0.001 mg/dm³, fluoride – 1,0 mg/dm³, nitrate – 160 mg/dm³, microbial number – 30 CFU/cm³, E. coli – absent in 100 cm³ of water.

Situational task № 5

A woman aged 30, 162 cm, weight 48 kg, vegetarian. Her diet contains 40 g of proteins (including 10 g of animal proteins), 30 g of fats and 400 g of carbohydrates. Energetic capacity of the nutrition is 2030 kcal. On examination: xeroderma, paleness of mucous membranes, fragility of nails, hair shedding; red tip of the tongue with fissures and aphtae; optic neuritis.

Situational task № 6

Daily nutrition of a man contains 60 g of proteins, 70 g of fats and 400 g of carbohydrates, 50 mg of ascorbic acid, 800 mg of calcium, 1000 mg of phosphorus and 9 mg of iron. Average coefficient of physical activity of a man is 1.7. Basal metabolism is 2000 kcal/day.

Situational task № 7

In the production of asbestos goods mixture of the asbestos with the cotton is used. This process is carried in special underground shelter with air-exhauster ventilation. At the reach of the air through the filter (time 10 minutes) with the speed of 20 litres per minute, filter mass is increased on 2 mg. Laboratory examination of the qualitative content of the dust revealed 50% of the asbestos content.

Situational task № 8

A worker of a textile factory aged 33 years is working at the bleaching station. She appealed to the clinic with complaints of irritation of the mucous membranes of the upper airways, swelling of eyelids, pain in the eyes, tearing, headache and shortness of breath with a sense of suffocation, pain in the retrosternal area and right quadrant. These symptoms appeared at the end of the day. During the work shift she was working with a fresh solution of sodium hypochlorite.

Situational task № 9

At in-hospital control after the observance of the hygienic regimen operating-room the instrumental-laboratory researches of quality of air environment are conducted. The followings results are: temperature of air – 24°C, rate of air movement – 0,15 m/c, relative humidity – 60 %, DLF – 2%, general artificial luminosity– 100 lx, artificial luminosity of the operation field – 700 lx, concentration of fluorotan – 2 mg/m³, inhalan – 20 mg/m³, chlorethyl – 5 mg/m³, diethylated ether – 30 mg/m³, mercury – 0.0003 mg/m³ (MAC accordingly is 20, 200, 50, 300 and 0.01 mg/m³), content of CO₂ – 0,1%, incurrence of bacteria – 300 unit/m³.

Situational task № 10

Therapeutic department consists of 2 ward sections; the capacity each of them is 44 beds. Each ward section contains 5 four-bed wards, 4 six-bed wards. The area every hospital ward is 22 m². Air temperature is 27 °C, relative humidity is 72 % , rate of air movement is 0.05 m/sec, microbial number is 7000 unit/m³, carbon dioxide concentration is 0,15 %.

Situational task № 11

A boy, aged 11, is examined: height – 130 cm, weight – 36 kg, chest circumference – 69.5 cm. Standards indicators of weight and chest circumference according to height are 26.6 kg and 63.3 cm, regress sigma accordingly are 4.4 and 4.0.

Situational task № 12

The city is provided by drinking water from two water pipes. The iodine content is 0.1-0.3 µg/l in the first water pipe and 2-3 µg/l in the second one. The experimental group in number of 750 persons is formed by inhabitants who has diffuse nontoxic goiter of I-II degrees, 550 persons of this group use water from first pipe, 200 persons – from second pipe. The control group consists of 750 healthy inhabitants of this city who are the same age and sex with the people of experimental group. 250 persons of control group use water from the first pipe and 500 persons – from second pipe. It was carried out a survey of people with experimental and control groups for the use of seafood or iodine supplements during the year.