

Nanosafety in the Manufacture And Study of Semiconductive Nanomaterials

Koshel V. I., Poplavskyy O. P., Poplavskyy I. O.

Vasyl Stefanyk Precarpathian National University, Ivano-Frankivsk, Ukraine

In the XXIth century ecological problems have become especially actual and sharp. Pollution of water and air causes about 5 percent of death nowadays.

Evaluating of research lab conditions is based on impact differential analysis of industrial environment factors. Under the simultaneous influence of several detrimental factors their integral power should be analysed.

Semiconductor devices fabrication includes the use of oxides of aluminum, magnesium, beryllium, barium carbonate, chromium compounds and manganese, mercury, lead and other materials.

As well as Poisonous fumes, which cause numerous health problems, all manufacturing operations are accompanied by the release of dust and gases. In most cases scientists work with fine polycrystalline materials (see Figure 1). Prolonged exposure to manganese can cause severe changes in the central nervous system. Oxides are toxic and cause ulcers and atrophic processes in the



Fig. 1. Topogram of film surface

nasal mucosa. The local concentration of harmful substances should not exceed the maximum allowable concentration of a nanopowder.

All manufacturing operations should be carried out in ventilated rooms. Powder dispersing should be carried out wet and completely sealed. Manual processing in a fume hood is allowed with air velocity of 15 m/s. Pressing of nanomaterials should be conducted in the closed equipment.

It is necessary to use personal protective equipment when working with nanomaterials. Overalls should be vacuumed. After the work it is necessary to wash your hands without using soap because soap rubbing facilitates penetration of nanoparticles into the bloodstream.

All these measures will help reduce air pollution and minimize the impact of harmful and hazardous substances.