

Reporter: The presence of heavy metals has become a relevant issue in south tyrol, especially in the province of Bolzano. We can find heavy metals either in the air or in the ground, because they are essential to maintain the correct metabolism of the earth crust. We will now listen to the opinion of a few experts in the field: the Doctor Sara Maria Rossi, the Doctor Cesare Muratori, the Doctor Theresa Profanter and the Doctor Hannah Perathoner.

Doctor Sara Maria Rossi: Heavy Metals are elements that are part of the earth crust and are essential to maintain the correct function of the metabolism.

However if found in high quantities they can be really dangerous for the environment and the organisms.

Examples of heavy metals are cadmium, arsenic, mercury and lead.

Dr. Cesare Muratori: Mercury is a heavy metal both organic and inorganic and present in minerals. Exposure to this element occurs due to bioaccumulation and therefore through water and food.

Dr. Profanter: Arsenic is also one of the most toxic elements that exists, although it is naturally found in small quantities. Humans can be exposed to arsenic through food, water, air and it can penetrate the body through the skin tissues, the gastrointestinal and pulmonary apparatus. Human activity, however, remains the main cause of atmospheric dispersion, through the industrial and agricultural sectors.

Dr. Perathoner: Of all the metals one of the most dangerous is lead, present in the atmosphere, often in drinking water transported in old pipes, in contaminated soils and then in vegetables, fruit juices, milk and meat. What influenced the spread of lead was the car development in the 1920s in America, making it a global problem.

Reporter: Of course there are many consequences concerning the presence of heavy metals. The most widespread are the diseases deriving from metal intoxication indicated by the professor. But where do these huge quantities of heavy metals come from and which pathologies do they cause? We will now listen to the opinion of Dr. Helene Maier and Dr. Maria Rossi.

Dr. Maier: First of all there are many factors that influence exposure to heavy metals. In fact, there are emissions caused by man like those due to industry, drugs, vaccines and traffic to others due to natural causes such as volcanic eruptions, dust coming from the Sahara etc. Specifically, fine powders such as PM 10 and PM 2,5, for example, are able to transport heavy metals and thus cause their deposition. Their distribution depends on the season. For example, in winter the concentration of fine dust in the valley floor (as in Bolzano) is often higher than the high altitude (like in Renon). This is because thermal inversion prevents air masses near the ground from rising upwards.

Dr. Rossi: Another factor that causes the actual emission of heavy metals is the incinerator. Exposure to the compounds emitted by incinerators may take place, for example, by inhalation of contaminated air. In recent years, with technological progress, it has become possible to monitor the level of some toxic compounds from incinerators in human body tissues. Although emissions are controlled, there are still many pathologies - cancer and not - strictly linked to the combustion of waste.

Reporter: A study was carried out in Trieste, to investigate the impact of atmospheric

pollution caused by various sources (shipyards, foundries, incinerator and city center) on the development of cancers.

But what are the diseases that these metals, such as arsenic, mercury and lead, cause?

Dr. Rossi: The complications of mercury, arsenic and lead can be of two types: cancer and non-cancer. For example, lead, by binding to red blood cells, is deposited in the bones and causes damage to DNA, liver and kidneys. Mercury, on the other hand, settles in the liver, in the central nervous system and in the kidneys, causing damage to the brain. Finally, arsenic compounds are easily absorbed by the respiratory system and the gastrointestinal system causing lung and liver tumours.

On average, in Italy, 470 people die every day due to a tumour.

Reporter: Let's see some data about it now.

Is there a way to stop the very high incidence of tumours in Italy?

Dr. Profanter: First of all we need to encourage the use of filters in factories that work with heavy metals. Certainly it is also important to carry out checks on the foods and beverages we take on a daily basis, but above all to further develop air quality and soil quality controls in cities and to reduce air pollution.

Naturally every citizen can and should contribute individually to make this possible perspective to improve their own health and the health of others.

Reporter: After listening to the opinion of the experts, it is clear how harmful heavy metals are present in both the air and the soil and how important it is to protect ourselves. For this reason it is essential to be active in the control of their values and their use.

We thank the doctors who collaborated in the making of this video and we thank you for your attention!