

# NEW STUDY: ULTRAFINE DUST IS A VERY COMMON CAUSE OF CARDIOVASCULAR DISEASES

*Posted on February 20, 2019 by Manfred Könning*



**Ultrafine dust leads to more cardiovascular diseases than acute heart attacks, cardiac insufficiency or cardiac arrhythmia - that's the result of a new study. Welders are particularly affected. Most of the particles that can be found in welding fumes are ultrafine, Scientists are now speaking out in favor of stronger measures being taken against particulate matter.**

Air pollution containing fine particulates accounts for more than four million deaths each year – around 60 percent of which result from cardiovascular diseases. An international group of scientists from Germany, the UK and the US has now investigated the effects of air pollution in the form of fine dust (including ultrafine dust), ozone, nitrogen dioxide, carbon monoxide and sulfur dioxide on human vascular function. These particulate and gaseous pollutants that arise during the welding process can, among other things, cause acute cardiovascular (heart and vascular) damage.

## **Ultrafine dust is especially dangerous**

Particulate matter plays a prominent role in the damaging effect of air pollution on the vascular system. Ultrafine dust, composed of particles with a size of less than 0.1 microns, is particularly dangerous. These have an increased cardiovascular toxicity. In addition, according to the study there are 18 different types of ultrafine dust that can easily break through the defense system of the lungs.

Ultrafine dust can trigger a malfunction within blood vessels – more specifically, on their innermost wall layers. The consequences are chronic hypertension or chronic inflammations such as atherosclerosis (vascular calcification), in which cholesterol and other fats are stored in the inner wall layer of the blood vessels. This can result in the vessels narrowing so much that organs are not supplied with sufficient oxygen.

## **Intensive physical effort amplifies these negative effects**

An important factor in the impact of ultrafine dust and other hazardous substances is so-called oxidative stress. This is a condition in which the concentration of free radicals (oxygen compounds in the cells) becomes very high and there is a lack of a corresponding counterbalance of antioxidants (chemical compounds that slow down or prevent the oxidation of other substances). Oxidative stress develops particularly quickly during heavy physical exercise and weakens the the lungs' defenses.

In light of these study results, scientists are calling for more research into developing more effective measures against pollution – both in terms of technical equipment and medicines. Air quality needs to be improved overall and awareness of the cardiovascular effects of hazardous substances needs to be strengthened still further.

In their conclusion, they also indicate that the use of filter devices and other occupational safety solutions are the only option in protecting against the negative consequences of air pollution from ultrafine dust and other hazards.



