

# Chromium dioxide and diseases:

*what is known  
in science about this?*



Rijksinstituut voor Volksgezondheid  
en Milieu  
Ministerie van Volksgezondheid,  
Welzijn en Sport



This leaflet gives an overview of the diseases that can be caused by chromium dioxide:

- In the case of a number of diseases it is clear that chromium dioxide can cause these;
- In the case of a number of other diseases it is unlikely that chromium dioxide can cause these;
- It is not yet sufficiently clear whether a number of other conditions are caused by chromium dioxide.

It is not possible to determine whether your own illness is caused by working with chromium dioxide at tROM on the basis of the information contained in this leaflet.

Further research is being carried out with the overview of diseases that can be caused by chromium dioxide. Researchers are seeking to ascertain how likely it is that exposure to chromium dioxide by working at tROM may be the cause of these diseases.

## What does this overview mean?

In the case of a number of diseases in the overview it is known that chromium dioxide can cause these diseases among humans. However, besides exposure to chromium dioxide at tROM, these diseases can also have other causes. For example another cause may be smoking or alcohol consumption. Besides this people may have been exposed to chromium dioxide or other dangerous substances in other places or at other workplaces besides tROM. So the fact that someone is ill and has been exposed to chromium dioxide does not necessarily mean that this disease was caused by the chromium dioxide.

The overview also lists other diseases which probably cannot be caused by chromium dioxide. Other effects are also covered, for which it is not yet sufficiently clear whether they could be caused by working with chromium dioxide at tROM. In addition diseases are referred to which have been reported by interested parties, for which there is too little scientific information to draw any conclusions.

## Ways in which exposure to chromium dioxide can occur

Whether or not a disease can be caused by exposure to chromium dioxide depends to a large extent on how exposure takes place. Important factors are:

- How much chromium dioxide was someone exposed to?;
- How long did the exposure continue: long periods of time and on multiple occasions, or just a few times?;
- What type of contact was there with chromium dioxide: via the skin, breathing in or swallowing?;
- What type of chromium dioxide was it? For example the extent to which chromium dioxide is dissolved in water is important, because that has an influence on the level of risk to health;
- How large were the chromium dioxide particles? For example were they particles in paint spray or dust particles?

These matters determine how much chromium dioxide enters the body and which organs it comes into contact with. So they need to be assessed for each disease separately. This assessment determines how likely it is that chromium dioxide is the cause of the disease.

## How did this leaflet come into existence?

In 2014 the Dutch Centre for Vocational Diseases (NCvB) investigated which diseases can be caused by exposure to chromium dioxide. The National Institute for Public Health and Environment (RIVM) then carried out extensive research into what is known from scientific literature about the diseases that can be caused by chromium dioxide. The results of the RIVM investigation have been examined by a large group of experts.

## Chromium dioxide *can* cause the following diseases

Chromium dioxide can cause the following diseases among people (there are sufficient indications according to the latest state of scientific knowledge):

- Lung cancer;
- Cancer of the nose and sinuses;
- Chromium dioxide related allergic contact eczema;
- Chromium dioxide related allergic asthma and allergic rhinitis;
- Chronic lung disease (COPD, pulmonary fibrosis, interstitial lung conditions);
- Perforation of the nasal septum from chromium sores.

Chromium dioxide is suspected of being capable of causing the following disease among people, (the latest science provides limited indications):

- Stomach cancer.

**Note: There are either sufficient or limited indications for the above diseases among people. The likelihood of these diseases being caused by exposure to chromium dioxide at tROM is currently being investigated.**

## It is *unlikely* that Chromium dioxide can cause the following diseases

In the case of some diseases it is unlikely that chromium dioxide can cause the disease among people (the latest science provides no indications or insufficient indications). A number of these diseases have been looked into specifically, due to questions from interested parties.

It is unlikely that chromium dioxide can cause the following diseases and effects among humans:

- Cancers of the digestive tract (cancers other than stomach cancer);
- Throat cancer;
- Conditions affecting the immune system (apart from allergy and chronic lung diseases);
- Kidney conditions;
- Liver conditions;
- Effects on the cardiovascular system;
- Effects on the digestive tract (apart from stomach cancer);
- Effects on the central nervous system;
- Dental problems.

**Note:** For the above conditions there are either no indications or insufficient indications among people. It is unlikely that chromium dioxide can cause these conditions among people. The RIVM is not carrying out any further research into how likely it is that these illnesses have been caused by exposure to chromium dioxide at tROM. If you wish to know the cause of your illness, you should speak to your doctor.

### **In the case of the following effects it is not yet sufficiently clear whether these are caused by chromium dioxide**

It is not yet sufficiently clear whether the following effects can be caused among people by working with chromium dioxide:

- Effects on the reproductive system;
- Effects on (embryonic) development.

The Health Council established in 2016 that exposure to chromium dioxide can cause these effects among animals, and it is assumed that these effects may be relevant for people.

**Note:** It is not yet sufficiently clear whether these effects can also occur among people due to working with chromium dioxide. First it is necessary to determine whether these effects may occur among people due to the form of the exposure at the workplace. Only then is it possible to draw a conclusion about how likely it is that exposure to chromium dioxide at tROM is the cause.

Chromium dioxide *can* cause the following diseases.

- Lung cancer.
- Cancer of the nose and sinuses.
- Chromium dioxide related allergic contact eczema.
- Chromium dioxide related allergic asthma and rhinitis.
- Chronische lung diseases (COPD, pulmonary fibrosis, interstitial lung conditions).
- Perforation of the nasal septum from chromium sores.

Chromium dioxide is *suspected* of being capable of causing the following diseases.

- Stomach cancer.

The RIVM is going to investigate how likely it is that these diseases are caused by working with chromium dioxide.



It is *unlikely* that chromium dioxide can cause the following diseases.

- Cancers of the digestive tract (cancers other than stomach cancer).
- Throat cancer.
- Conditions affecting the immune system (apart from allergy and chronic lung diseases).
- Kidney conditions.
- Liver conditions.
- Effects on the cardiovascular system.
- Effects on the digestive tract (apart from stomach cancer).
- Effects on the central nervous system.
- Dental problems.

The RIVM is not carrying out any further investigation into these diseases. If you wish to know the cause of your illness, you should speak to your doctor.



It is not yet *sufficiently clear* whether Chromium dioxide can cause the following effects.

- Effects on the reproductive system.
- Effects on (embryonic) development.

First the form of exposure at the workplace will be investigated, to determine whether these effects can be caused among humans.



## **Are you ill, and do you think that this is connected to exposure to chromium dioxide?**

If you are currently ill you should contact your doctor. Tell your doctor that you have worked with chromium dioxide. If your doctor has any questions he can contact the RIVM or the National Poisoning Information Centre ([www.vergiftigen.info](http://www.vergiftigen.info)).

Take the information sheet 'Health risks from chromium dioxide for general practitioners' with you to your doctor:

[http://www.rivm.nl/Documenten\\_en\\_publicaties/Algemeen\\_Actueel/Brochures/Milieu\\_Leefomgeving/Informatieblad\\_voor\\_huisartsen\\_Gezondheidsrisico\\_s\\_van\\_chroom\\_6](http://www.rivm.nl/Documenten_en_publicaties/Algemeen_Actueel/Brochures/Milieu_Leefomgeving/Informatieblad_voor_huisartsen_Gezondheidsrisico_s_van_chroom_6).

## **Do you want to know more about chromium dioxide in general?**

You will find answers to general questions about chromium dioxide in the brochure 'What is chromium dioxide'. For example: How can you come into contact with it, and what does chromium dioxide do within the body? The contents of the brochure are summarised in a video.

> Brochure 'What is chromium dioxide?':

[http://www.rivm.nl/Documenten\\_en\\_publicaties/Algemeen\\_Actueel/Uitgaven/Milieu\\_Leefomgeving/Chroomonderzoek/Informatiebrochure\\_Wat\\_is\\_chroom\\_6](http://www.rivm.nl/Documenten_en_publicaties/Algemeen_Actueel/Uitgaven/Milieu_Leefomgeving/Chroomonderzoek/Informatiebrochure_Wat_is_chroom_6)

> Video 'What is known in science about chromium dioxide?':

[http://www.rivm.nl/Documenten\\_en\\_publicaties/Algemeen\\_Actueel/Multimedia/Milieu\\_Leefomgeving/Video\\_Wat\\_is\\_er\\_in\\_de\\_wetenschap\\_bekend\\_over\\_chroom\\_6](http://www.rivm.nl/Documenten_en_publicaties/Algemeen_Actueel/Multimedia/Milieu_Leefomgeving/Video_Wat_is_er_in_de_wetenschap_bekend_over_chroom_6)

## Do you have any further questions about the RIVM investigation?

For questions about the RIVM investigation you can contact the Information Centre Tilburg Chromium Dioxide at the CAOP:

Email: [Tilburg-chroom5@caop.nl](mailto:Tilburg-chroom5@caop.nl)

telephone: 06 20 44 81 94

This information centre is open from Monday to Friday, from 9.00 to 17.00.

## Do you have any more questions about this information leaflet?

On the RIVM's website you will find answers to frequently asked questions:

[http://www.rivm.nl/Onderwerpen/C/Chroom\\_6\\_en\\_CARC/Gezondheidsonderzoek\\_chroom\\_6\\_bij\\_de\\_gemeente\\_Tilburg/Waar\\_zijn\\_de\\_eerste\\_resultaten\\_te\\_vinden](http://www.rivm.nl/Onderwerpen/C/Chroom_6_en_CARC/Gezondheidsonderzoek_chroom_6_bij_de_gemeente_Tilburg/Waar_zijn_de_eerste_resultaten_te_vinden).

[www.rivm.nl/Onderwerpen/C/Chroom\\_6\\_en\\_CARC](http://www.rivm.nl/Onderwerpen/C/Chroom_6_en_CARC)

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