

Don't Give Chromium(VI) a Chance

Detecting | Mastering | Preventing

Possible Release of Chromium(VI) Compounds during Maintenance of CHP and Cogeneration Engines

To operators of combined heat and power (CHP) and cogeneration plants, contracting and operations management companies, municipal utilities, maintenance and occupational safety specialists

1. Occasion

During dismantling, overhaul and maintenance work on CHP engines, carcinogenic chromium(VI) compounds can be released, or their release cannot be ruled out. Affected are thermally insulated, chromium-alloyed hot components (exhaust manifolds, turbochargers, exhaust lines, expansion joints) and the textile or mineral high-temperature insulation on them.

This note is aimed specifically at sites with CHP and cogeneration engines. According to the model operating instruction of the BG BAU (German statutory accident insurance for the construction industry), removed mineral wool products should not be reused (WINGIS).

2. Situation under TRGS 561

The German Technical Rule for Hazardous Substances TRGS 561 "Activities involving carcinogenic metals and their compounds", version of 4 May 2026, describes thermally stressed chromium-alloyed industrial components in section 5.9.3: chromium(VI) compounds can form on such components and be deposited in insulation materials or assembly pastes. During dismantling and maintenance, exposure of employees cannot be ruled out.

Influencing factors according to TRGS 561 section 5.9.3 are the steel temperature, the chromium content of the alloy, the reaction time, alkali and alkaline earth metal oxides from insulation materials or assembly pastes, and atmospheric oxygen and humidity. Insulation containing calcium oxide can form calcium chromate, mineral wool containing sodium oxide can form sodium chromate.

Yellowish deposits on exhaust lines are often mistaken for sulphur. Visually, sulphur and chromate deposits cannot be distinguished; without analysis, the attribution is not reliable. The fuel does not matter: formation takes place thermochemically between the chromium-containing alloy and the alkaline oxides in the insulation, sodium chromate from approx. 200 °C, calcium chromate from approx. 350 °C. An exhaust manifold is therefore within the reaction range in normal operation.

Once formed, the chromium(VI) compounds remain on the previously insulated hot component and on the inside of the insulation element, as loose chromate that is easily stirred up and as chromate-containing dust. They can then no longer be attributed to the article, but must be classified as a substance or mixture. Looking at the surface is therefore not sufficient.

The decisive factor is not a rapid test, but the risk assessment:

If chromium(VI) contamination is present or cannot be ruled out, the protective measures of TRGS 561 apply.

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3. Legal classification

- TRGS 561 section 5.9.3 in conjunction with sections 4.1 and 4.2, and the minimisation requirement under § 7 GefStoffV (German Hazardous Substances Ordinance).
- Examine substitution and process changes under § 6 GefStoffV and TRGS 600 (insulation systems free of calcium and sodium oxide).
- Exposure register under § 10a GefStoffV for employees for whom exposure to category 1A or 1B carcinogens cannot be ruled out.
- Duty to inform contractors under § 15 GefStoffV (insulators, engine service).
- Examine occupational medical care under ArbMedVV (Ordinance on Occupational Health Care) if repeated chromium(VI) exposure cannot be ruled out.

This text does not replace a site-specific risk assessment.

4. REACH: reuse and upcoming restriction for chromium(VI) compounds

Sodium chromate can form when mineral wool products are used and is a substance of very high concern (SVHC) listed in Annex XIV of the REACH Regulation, entry 22. The sunset date was 21 September 2017. Since then, use without authorisation has not been permitted.

This is where the classification from section 2 takes effect: what is present at removal is not an unchanged article under Article 3(3), but a loose substance or a mixture on and in a used insulation element. Use under Article 3(24) also includes storage, keeping available and treatment. In our assessment, reinstallation may therefore already today constitute a use of sodium chromate subject to authorisation; here occupational safety and chemicals legislation meet in an uncomfortable way.

The burden of proof is uncomfortable: it is not the person giving the warning who has to prove the use, but whoever wants to reuse needs the basis for doing so: substance identity, representative sampling including the interior of the material, reference mass. Operational air measurements during plant operation and individual negative wipe tests do not provide this. If this proof cannot be provided, a use subject to authorisation cannot be ruled out.

In addition, there is the ongoing procedure: according to ECHA's Annex XV report of 2025, sodium chromate and the other chromium(VI) substances from Annex XIV are to be transferred into a restriction under Annex XVII. A ban on use above 0.01 per cent by weight with six exhaustively listed categories of exemptions has been proposed; individual authorisations would then no longer exist. As of 20 September 2026, the RAC opinion is available, the draft SEAC opinion was adopted in June 2026, and the final SEAC opinion is scheduled for December 2026. Until adoption, Article 56 with entry 22 continues to apply unchanged.



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5. Protective measures during removal (TRGS 561 and WINGIS)

In WINGIS, the BG BAU classifies the removal of chromate-contaminated insulation materials as a carcinogenic activity (signal word danger).

Removed mineral wool products must not be reused.

Recommended measures as soon as chromium(VI) contamination is present or cannot be ruled out:

- Delimit and label the work area ("No entry for unauthorised persons!"); prevent dust from spreading, e.g. by covering gratings with plastic sheeting.
- Low-dust methods: do not tear, do not throw, do not blow off with compressed air, do not sweep dry. Extraction at the point of origin, only dust extractors of dust class H.
- Respiratory protection at least FFP2 for short-term activities, half mask with P3 or FFP3 for longer activities (WINGIS: always respiratory protection).
- Chemical protective suit type 5 with hood, nitrile-coated textile gloves or chromate-free leather, eye protection; dispose of disposable protective clothing.
- Black-white separation, no carry-over; place waste in PE bags or big bags at the point of origin, do not mix with construction rubble, label and dispose of as carcinogenic waste.
- Extend the risk assessment to chromium(VI) on hot components; instruct contractors in writing; carry out a substitution check.

Note: the chromium(VI) compounds named here are classified as chronically hazardous to the aquatic environment with long-lasting effects (H410) and must not be released into the environment. Contaminated components must therefore be disposed of properly and in accordance with regulations.

6. Forwarding

Please forward internally to operations management, occupational safety specialist, environmental officer and maintenance, insofar as CHP and cogeneration engines with thermal insulation are operated.

References:

TRGS 561, version 4 May 2026, sections 3.3.4 and 5.9.3 [4.1 and 4.2]

TRGS 400, 401, 402, 500, 600, 910

WINGIS operating instruction "Ausbau chromatbelasteter Dämmstoffe" (BG BAU)

Warnings from engine and insulation manufacturers

Further reading: guide "Es ist kein Schwefel – Chromate am Arbeitsplatz" (It is not sulphur: chromates at the workplace)

Kind regards

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Długoleśka, September 2026

