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Chromium(VI) on Exhaust Components: Vehicle and Engine Manufacturers Require Protective Measures in the Workshop

The Chromate Experts publish a technical note for car and commercial vehicle workshops, reconditioners, vehicle recyclers and waste disposal companies

Carcinogenic chromium(VI) compounds form on turbochargers, exhaust manifolds, catalytic converters, particulate filters and SCR systems during normal driving. Several vehicle, engine and component manufacturers have issued service information on this to their workshops since 2023. According to these reports, all models of passenger cars and vans are affected, as well as engines for off-road, power and marine applications.

The cause lies in the material. When exhaust-carrying chromium-alloyed components come into contact with calcium-containing materials at temperatures from approx. 300 °C, calcium chromate forms in the presence of atmospheric oxygen. Sources of calcium in the engine compartment are heat shields and insulation mats, gaskets and assembly pastes. Through fibre release and turbulence, the chromates are also deposited far away from these parts, on flanges, clamps, sensors and lines. They are not always visible: chromate-containing dust can be whitish and look like ordinary dirt.

Manufacturers therefore require respiratory protection of class P3 or FFP3, a protective suit, nitrile gloves and safety goggles for work on these components. Compressed air is prohibited, and only calcium-free assembly pastes are permitted for assembly work. Individual manufacturers explicitly require contamination to be assumed as long as it has not been ruled out by an approved test method.

Measurements confirm this. The occupational health service of Alpes-Maritimes detected chromium(VI) on the exhaust manifold, turbocharger and screw connections in a company servicing diesel engines. After dismantling, it was also found on the mechanics' hands, although they wore gloves. This was published by the French INRS in September 2025. An in-house colour test remained negative there despite significant contamination. Chromium(VI) compounds are carcinogenic, absorbed through the skin and skin-sensitising (H350, H317) as well as chronically hazardous to the aquatic environment with long-lasting effects (H410).

Positive chromium(VI) rapid tests in the engine compartment of passenger cars.

Don't Give Chromium(VI) a Chance

Detecting | Mastering | Preventing

For Germany, the German Technical Rule for Hazardous Substances TRGS 561, in force since 4 May 2026, describes the situation in section 5.9.3. The BG ETEM (German statutory accident insurance for energy, textiles, electrical and media products) states that "according to current knowledge, all industries in which the above-mentioned influencing factors apply may be affected by the problem".

The hazard does not end in the workshop. With every removed component, the contamination reaches the used parts store, the reconditioner or the recycler. The same applies to vehicle recyclers and dismantling companies: where end-of-life vehicles are taken apart, used parts are removed and catalytic converters are opened for precious metal recovery, the same components are moved, cut and shredded. Chromium(VI) compounds are also classified as chronically hazardous to the aquatic environment (H410) and are water-soluble.

The Chromate Experts have carried out wipe tests in the engine compartment of several vehicles. The results were positive and match the French measurements. Vehicle owners open the hood for routine tasks, top up washer fluid, check the oil level and coolant. The manufacturers' reports are primarily addressed to workshops; some of them are classified internally as confidential and, according to their own note, may not be published on external websites or in social media.

"The problem is not caused by a mistake in the workshop, but by the materials installed," says Markus Sommer, initiator of The Chromate Experts. "Cleaning only protects during the respective job. As long as calcium-containing insulation parts remain in the vehicle, the chromates form again. Workshops need to know this before they change the next turbocharger."

The technical note "Chromate in the Engine Compartment" is available on request. It summarises formation, manufacturer reports, legal situation and protective measures on six pages.

Typical used parts from the exhaust line; yellowish deposits on the particulate filter; sensor with deposits on the insulated exhaust pipe.

About The Chromate Experts

The Chromate Experts is a network with partners in Germany, Switzerland and the United Kingdom. It deals with the formation of chromium(VI) compounds on thermally loaded chromium-alloyed components in industry, energy generation, shipping and vehicle technology. Its initiator is Markus Sommer, who has worked in high-temperature insulation since 1988.

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