

Abrasive blasting is an industrial process to remove automobile coatings

During abrasive blasting, cured coatings are fractured into fine airborne particles that may contain:

Organic resins

Solvent residues

Plasticizers

Pigments

Fillers

Decomposition products

Abrasive media particles

Even when heavy metals are absent or below regulatory thresholds, inhalation of airborne paint dust and organic coating particles can present occupational and environmental health concerns if not properly controlled.

Potential Toxic Organic Compounds in Automotive Paint Systems

Examples of Non-Metal Hazards Encountered During Abrasive Blasting

Older automotive coatings (particularly those manufactured before the late 1970s) often contained organic solvents, resins, plasticizers, and curing agents that differ substantially from modern coatings. Although many hazardous metals have been reduced or eliminated, modern paints still contain chemicals that require careful handling.

Hazard Category	Examples	Potential Health Effects
Known or Suspected Carcinogens	Benzene (historical solvent), formaldehyde, certain glycol ethers	Increased cancer risk following repeated or prolonged exposure
Respiratory Sensitizers	Polyisocyanates, epoxy curing agents	Occupational asthma, allergic sensitization, breathing difficulty
Neurotoxic Solvents	Toluene, xylene, methyl ethyl ketone (MEK)	Headaches, dizziness, impaired coordination, central nervous system effects

Hazard Category	Examples	Potential Health Effects
Liver & Kidney Toxicants	Aromatic solvents, glycol ethers	Liver and kidney damage after repeated exposure
Endocrine-Active Chemicals	Certain phthalate plasticizers	Potential effects on hormone systems (varies by compound)
Respiratory Irritants	Acrylic resin dust, epoxy dust, talc, silica, degraded paint particles	Coughing, bronchitis, reduced lung function
Skin Sensitizers	Epoxy resins, polyurethane curing agents	Dermatitis and allergic skin reaction

Federal Agency Guidance

EPA

Recommends controlling dust emissions during abrasive blasting to reduce releases of particulate matter and contaminants.

Advises proper collection, evaluation, and disposal of spent blasting media because its composition depends on the coating being removed.

Notes that older coatings may contain hazardous constituents requiring additional waste evaluation.

OSHA

Requires employers to assess workplace hazards and provide appropriate respiratory protection, engineering controls, and personal protective equipment when employees may be exposed to hazardous dusts, vapors, or chemicals.

Requires employers to communicate chemical hazards through Safety Data Sheets (SDSs) and training.

NIOSH

Recommends minimizing inhalation of airborne dust generated during abrasive blasting through engineering controls such as containment and local exhaust ventilation.

Recommends appropriate respiratory protection when engineering controls cannot adequately reduce exposures.

Identifies isocyanates, organic solvents, and respirable particulates as important occupational hazards associated with paint removal and coating work.

References

EPA – Abrasive blasting and hazardous waste guidance; particulate matter resources.

OSHA – Respiratory Protection Standard (29 CFR 1910.134); Hazard Communication Standard (29 CFR 1910.1200).

NIOSH – Workplace guidance on abrasive blasting, respirable particulates, organic solvents, and isocyanate exposure.