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Contamination in Data Centres and Server Rooms

A practical guide to finding the source, assessing the risk and verifying the clean

Dust on cabinet intakes, beneath a raised floor or around a doorway can be the first sign of a contamination problem. Start by finding out where it came from and whether it is still entering the room. That helps you decide what to clean and what to change to prevent a recurrence.

Where contamination comes from

Construction and refurbishment. Door replacement, drilling, cutting and floor works can introduce fine dust. Check adjoining works, access routes and any gaps in temporary barriers.

People, deliveries and maintenance. Footwear, trolley wheels and packaging carry debris across thresholds. Lifting floor tiles or working on cabling can disturb settled dust.

Outdoor air and cooling systems. Check whether deposits or elevated readings coincide with outdoor-air operation, a filtration change or poor filter sealing. Compare conditions across operating modes where practical.

How it can affect equipment

Deposits can restrict airflow through intakes and heat sinks. Depending on their composition and the environment, contaminants can also contribute to corrosion or electrical faults. Check the environmental requirements for the hardware installed on site.

When corrosion is suspected

Corrosive gases require a separate investigation. If you see unusual tarnishing or recurring corrosion, consider specialist assessment such as corrosion monitoring. An airborne particle count measures particles and cannot assess corrosive gases.

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Inspect the room and measure the air

Use the site history, surface inspection and particle readings together

Site inspection checklist

Record what changed. Note building works, door openings, filter changes, cooling modes and any unusual equipment alarms. Record when the issue was first noticed.

Map visible deposits. Photograph and log affected areas. Where access is authorised, inspect representative cabinet intakes, horizontal surfaces, thresholds, accessible underfloor areas and air paths.

Compare affected and unaffected areas. Look for patterns around a doorway, work zone or supply air path. Treat these as clues and test them against the site history.

Record conditions when sampling. Log locations, time, cooling and occupancy conditions, and work in progress. Agree representative conditions before comparing readings or planning formal classification.

Agree the scope with site operations. Confirm access, equipment restrictions, work windows, and any areas requiring isolation or further investigation. Document inaccessible areas.

Class 8 and surface cleanliness answer different questions

ISO 14644-1 Class 8 classifies air cleanliness by airborne particle concentration under the conditions tested. **IT Cleaning's separate surface requirement** is for all accessible surfaces in the agreed scope to be free from dust. Use visual inspection for settled dust and an agreed particle test for airborne classification.

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Control the source and verify the clean

Agree the evidence you need before work starts

From findings to action

Control the source. Agree measures with site operations. These may include containing nearby works, managing doors and deliveries, reviewing filtration or using suitable temporary air filtration during dusty work.

Plan the specialist clean. Agree the accessible surfaces, work methods and operating constraints. Define internal equipment cleaning separately and agree any shutdown requirements before work starts.

Check and document the result. Inspect accessible surfaces after cleaning. Where Class 8 validation is specified, perform post-clean airborne particle testing against ISO 14644-1. Record test conditions, locations and results in the report and provide a certificate when the specified classification is achieved.

Check the equipment specification

NVIDIA's ConnectX-8 SuperNIC for OCP 3.0 manual states that the operating environment should meet ISO 14644-1 Class 8 for airborne particle cleanliness and ISA 71.04 severity level G1 for gaseous contamination. Check the environmental requirements for the specific equipment installed at your site.

ISO 14644-1 — Air cleanliness classification • ISO 14644-3 — Test methods
NVIDIA ConnectX-8 SuperNIC — System Requirements

Request a contamination survey

Tell us where the issue is, what changed and whether the room is live. We can discuss a site survey, specialist cleaning and post-clean validation.

Enquire online • **sales@itcleaning.co.uk**