

CASE STUDY / AIR POLLUTION CONTROL

HCl Fume Scrubber Case Study

Corrosion escalation, operator safety risk, and permit-compliance exposure from HCl vapor, resolved with a polypropylene scrubber and ducting system instead of metal.

SITUATION

A California chemical processing plant, HCl vapor control

Hydrochloric acid vapor was driving corrosion, worker safety risk, and air-quality compliance exposure at a California chemical processing plant.

THE PROBLEM

HCl fumes were degrading ducting, valves, and metal assets — a corrosion-escalation problem with a compounding maintenance cost. Operator safety was at risk from ongoing acid vapor exposure. Fugitive emissions threatened the plant's air-quality permit compliance.

Three symptoms, one root cause. Corrosion, safety risk, and permit exposure all traced back to the same source: metal-wetted ducting and scrubber components in HCl vapor service. Treating them as three separate problems misses that a single material change addresses all three.

EQUIPMENT SPECIFIED

Component	Detail
Scrubber	Custom polypropylene packed-bed wet scrubber — high-impact PP construction, packed-bed gas-liquid contact
Controls	pH monitoring with automated alarms
Ducting	Chemical-resistant PP ducting throughout the system

No specific manufacturer or model disclosed in the source case study.

THE SPECIFICATION RULE

HCl vapor service calls for polypropylene, not metal

Polypropylene is commonly selected for hydrochloric acid fume control because it resists corrosion better than many metals in acid vapor service. This is an architecture-level rule, not a brand-level one — any metal-wetted ducting or scrubber component in HCl vapor service will face the same corrosion mechanism, regardless of alloy grade or manufacturer.

DESIGN OUTCOME

HCl vapor service → polypropylene, not metal

Designed to reduce corrosion events, improve operator safety, and support permit compliance. Framed as design intent, not measured post-installation results — no undisclosed numbers are invented here.

NEXT STEP

Every fume-control application has a different gas concentration, flow rate, and duty cycle. A spec review starts with your actual process data — not a generic scrubber swap.

[Request a spec review](#)

NEXT STEP

Send LibertyCES the process data, not a part number.

Off-gas chemistry, concentration, flow rate, temperature, and current infrastructure — that's what a real spec review needs to start.

Request a spec review

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