

Mold Remediation: Scope 3 Emissions Mapping and Calculation Guide

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Mold remediation has a different emissions signature than water damage or fire restoration — it is slower, more materials-intensive per square foot, and dominated by chemical treatments and containment infrastructure rather than vehicle transportation. This guide provides the emission factors, calculation methodology, and a complete worked example for a Condition 3 commercial mold remediation.

Job Classification Before Calculating



Job classification before calculating.

CONDITION (IICRC S520)	SCOPE	EMISSIONS PROFILE	TYPICAL RANGE
Condition 1 — Normal fungal ecology	No remediation	N/A	0 tCO2e
Condition 2 — Settled spores, no active growth	HEPA vacuum + antimicrobial wipe-down	Transportation dominant, minimal materials	0.1–0.4 tCO2e
Condition 3 — Active growth, limited area (<100 sq ft)	Containment, demolition, remediation, clearance	Materials + transportation balanced	0.3–1.0 tCO2e

Condition 3 — Active growth, large area (100–1,000 sq ft)	Full remediation protocol	Materials dominant, transportation secondary	0.8–4.0 tCO ₂ e
Condition 3 — Large commercial HVAC system affected	Full remediation + duct cleaning/replacement	All four categories significant	2.0–8.0 tCO ₂ e

Category 4: Transportation Emission Factors

Mold remediation typically involves more crew trips relative to equipment trips than fire or water jobs — the slower pace means daily crew mobilization across an extended project without proportionally heavy equipment deployment.

VEHICLE TYPE	KG CO ₂ E PER MILE	TYPICAL USE
Light truck / work van	0.503	Daily crew transport
Cargo van (containment materials)	0.503	Poly sheeting, negative air machines
Medium equipment trailer	1.084	Air scrubbers, negative air pressure units
Dump truck (debris)	2.25 (loaded) / 1.612 (empty)	Demolition debris removal

Category 1: Materials Emission Factors

Mold remediation is the most materials-intensive restoration job type per square foot of affected area. Containment infrastructure, biocidal treatments, and HEPA filtration media represent significant Category 1 emissions even on smaller jobs.

MATERIAL	UNIT	KG CO2E PER UNIT	NOTES
Quaternary ammonium biocide (liquid)	Liter	2.8	EPA EEIO — chemical manufacturing
Hydrogen peroxide biocide (liquid)	Liter	1.9	EPA EEIO — chemical manufacturing
Borax-based mold treatment	kg	1.1	EPA EEIO — inorganic chemical
Encapsulant (antimicrobial-infused sealant)	Gallon	4.2	EPA EEIO — paint and coatings
6-mil polyethylene sheeting	m ²	0.55	EPA EEIO — plastics product manufacturing
4-mil polyethylene sheeting	m ²	0.37	EPA EEIO — plastics product manufacturing
Zipper door (containment, reusable)	Each	1.8 (amortized over 20 uses)	EPA EEIO — plastics/hardware — divide by use count
Zipper door (disposable)	Each	1.8	Full factor per use
HEPA filter (air scrubber, negative air)	Each	3.2	EPA EEIO — industrial machinery
HEPA vacuum bag (commercial)	Each	0.4	EPA EEIO — paper/plastics
Full Tyvek suit (Level C minimum)	Each	1.2	EPA EEIO — apparel manufacturing
Half-face respirator + P100 cartridges (pair)	Pair	0.8	EPA EEIO — medical equipment

Nitrile gloves (pair)	Pair	0.3	EPA EEIO — rubber/plastics
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Biocide application rate proxies by condition and surface type: Condition 3 porous surfaces (drywall, wood framing) — 0.020 liters/sq ft for first application, 0.015 liters/sq ft for second application. Non-porous surfaces — 0.008 liters/sq ft. HVAC duct interiors — 0.012 liters/linear ft.

Containment materials proxy: Standard containment setup for a single affected room uses approximately 50 linear feet of 6-mil poly at ceiling height (8 ft average) = 120 m² of sheeting. Add 20 m² per additional doorway or penetration. Reusable zipper doors amortize over approximately 20 uses before replacement.

Category 5: Waste Emission Factors

WASTE TYPE	DISPOSAL METHOD	TCO ₂ E PER TON	NOTES
Mold-contaminated porous materials (drywall, wood)	Standard landfill	0.18	EPA WARM + contamination premium for bagged disposal
Mold-contaminated insulation	Standard landfill	0.33	EPA WARM v16 — fiberglass category
HEPA filter media (spent)	Standard landfill	0.28	EPA WARM — mixed synthetic materials
HEPA vacuum bags (spent)	Standard landfill	0.25	EPA WARM — mixed materials
Disposable PPE and containment	Standard landfill	0.25	EPA WARM — mixed plastics
		0.38	

Mold-contaminated materials with concurrent ACM	Licensed hazmat landfill		Apply when ACM present — hazmat transport factor
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Category 12: Demolished Building Materials

MATERIAL	TCO2E PER TON (LANDFILL)
Gypsum drywall	0.16
Wood framing (dimensional lumber)	-0.07 (carbon storage credit)
Fiberglass batt insulation	0.33
Cellulose insulation (spray-applied)	0.06
OSB sheathing	-0.05 (carbon storage credit)
Carpet + pad	0.33

Complete Worked Example: Condition 3 Commercial Mold — Server Room and Adjacent Office

Job profile: HVAC condensate leak caused active mold growth behind drywall in a server room (200 sq ft) and adjacent office (300 sq ft). Total affected area: 500 sq ft. Scope: containment setup, demolition of all affected drywall (both rooms) and insulation (server room only), biocide treatment, HEPA vacuuming, clearance prep. No HVAC duct work in scope. Duration: 5 days. Crew: 2 technicians. Facility: 19 miles from job site.

Category 4 — Transportation

Crew van: 1 cargo van $\times$ 38 mi RT $\times$ 6 trips (5 work days + equipment pickup) = 228 mi $\times$ 0.503 = **115 kg CO₂e**

Equipment delivery (negative air machines): 1 $\times$ 38 mi $\times$ 2 trips = 76 mi $\times$ 1.084 = **82 kg CO₂e**

Debris removal (one load, dump truck): 1 $\times$ 22 mi $\times$ 2.25 = **50 kg CO₂e**

Category 4 total: 247 kg CO₂e = 0.25 tCO₂e

Category 1 — Materials

Biocide (first application — 500 sq ft porous surfaces): 500 $\times$ 0.020 = 10 L $\times$ 2.8 = **28 kg CO₂e**

Biocide (second application): 500 $\times$ 0.015 = 7.5 L $\times$ 2.8 = **21 kg CO₂e**

Encapsulant (server room only, non-porous surfaces): 2 gallons $\times$ 4.2 = **8 kg CO₂e**

6-mil poly sheeting: 2 rooms $\times$ 120 m² each = 240 m² $\times$ 0.55 = **132 kg CO₂e**

Zipper doors (2 rooms $\times$ 2 doors, reusable at 20-use amortization): 4 $\times$ 1.8/20 = **0.4 kg CO₂e** (negligible)

HEPA filters (2 negative air machines $\times$ 2 filter changes): 4 $\times$ 3.2 = **13 kg CO₂e**

HEPA vacuum bags: 10 bags $\times$ 0.4 = **4 kg CO₂e**

PPE: 2 tech $\times$ 5 days $\times$ 2 Tyvek = 20 $\times$ 1.2 = 24 kg; gloves: 2 $\times$ 5 $\times$ 4 = 40 pairs $\times$ 0.3 = 12 kg; respirator cartridges: 2 $\times$ 5 $\times$ 1 pair = 10 $\times$ 0.8 = 8 kg. **PPE: 44 kg CO₂e**

Category 1 total: 250 kg CO₂e = 0.25 tCO₂e

Category 5 — Waste

Mold-contaminated drywall (500 sq ft × 2.5 lbs/sq ft = 1,250 lbs = 0.57 tons): 0.57 × 0.18 = **0.10 tCO₂e**

Server room insulation (200 sq ft × 1.5 lbs/sq ft = 300 lbs = 0.14 tons): 0.14 × 0.33 = **0.05 tCO₂e**

Spent HEPA filters (4 filters × 2 lbs each = 8 lbs = 0.004 tons): 0.004 × 0.28 = **0.001 tCO₂e** (negligible)

PPE and containment disposal (~0.06 tons): 0.06 × 0.25 = **0.015 tCO₂e**

Category 5 total: 0.17 tCO₂e

Category 12 — Demolished Materials

Drywall demolished (500 sq ft): 0.57 tons × 0.16 = **0.09 tCO₂e**

Fiberglass insulation (server room, 200 sq ft): 0.14 tons × 0.33 = **0.05 tCO₂e**

Category 12 total: 0.14 tCO₂e

Job Total

CATEGORY	TCO ₂ E
Category 4 — Transportation	0.25
Category 1 — Materials	0.25

Category 5 — Waste disposal	0.17
Category 12 — Demolished materials	0.14
Total	0.81 tCO₂e

Key observation from this example: Category 1 (materials) and Category 4 (transportation) are nearly equal at 0.25 tCO₂e each — confirming that mold remediation has a more balanced emissions profile than water or fire jobs where transportation typically dominates. This means reduction strategies that focus on materials (lower-emission biocide formulations, reusable containment systems) have comparable impact to fleet electrification for this job type.

Why does containment sheeting (Category 1) generate significant emissions?

Polyethylene is a petroleum-derived product with non-trivial manufacturing emissions. At 0.55 kg CO₂e per m², a large commercial remediation using 300–500 m² of poly sheeting generates 165–275 kg CO₂e from containment materials alone. Switching to thinner sheeting where conditions allow or reusing containment systems across jobs reduces this meaningfully.

How do I handle clearance testing in the RCP calculation?

Clearance testing by an independent industrial hygienist is a separate purchased service — the IH’s transportation and testing are Scope 3 Category 1 for the property owner (as a directly purchased service), not part of the remediation contractor’s RCP calculation. The RCP boundary is the remediation contractor’s own scope of work.

Does the presence of moisture in the affected materials affect the waste emission factor?

Use dry weight for emission factor calculations, not wet weight. Wet demolished drywall weighs approximately 50% more than dry drywall due to absorbed moisture. If you're estimating weight from area (2.5 lbs/sq ft), this factor already accounts for typical dry weight — apply it directly without adjusting for moisture content.

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Negative Air Machine Energy Consumption: Model-Specific Data

The Category 1 table above uses a single HEPA filter factor and generic equipment values. Negative air machines (NAMs) are the dominant energy consumer in mold containment and their wattage varies dramatically across models at similar CFM ratings. Use model-specific data where available; use the weighted average proxy where it is not.

MODEL	CFM	AMPS (HIGH SPEED)	APPROX. WATTS	KWH PER 24-HR DAY
AramSCO Syclone (1000 CFM)	1,000	15A	~1,725W	41.4
Nikro NCF1800 (2-speed)	1,800	9A	~1,035W	24.8
Abatement Technologies FA2000EC	1,975	20A	~2,300W	55.2
Aerospace 2000 (Novatek)	2,000	9.4A	~1,034W	24.8
IDS Blast F2100 (2000 CFM)	2,000	20A	~2,300W	55.2

RCP proxy for NAMs where model is unspecified: 1,500W / 36 kWh per 24-hour day (weighted average across the above models). At the national grid emission factor (0.3499 kg CO₂e/kWh), a single NAM running 24 hours generates approximately **12.6 kg CO₂e per day**. A large commercial remediation running four NAMs continuously for 10 days produces roughly **504 kg CO₂e** from containment energy alone — a meaningful emission source that should be documented in equipment runtime records rather than left as a proxy.

HEPA filter note: HEPA filters in NAMs are single-use and non-cleanable. Manufacturer recommendations call for replacement when differential pressure exceeds 2.6 inches W.C. on high speed (Nikro NCF1800 spec) or approximately every 6–12 months under normal use. During active mold remediation with high spore loads, replacement frequency increases. Standard HEPA filter dimensions for 2,000 CFM machines are 16" × 24" × 11.5". Log filter changes at the job level for accurate Category 1 accounting.



Mold-Contaminated Debris: Waste Classification Confirmed

Mold waste is not regulated at any level — federal or state — regardless of IICRC S520 contamination condition. The University of Florida Environmental Health and Safety states plainly: mold-contaminated material is not regulated and can be disposed of as regular waste. Condition 3 materials (actively colonized porous materials) must be physically removed and double-bagged in sealed 6-mil polyethylene per IICRC S520 protocol, but disposal occurs in standard MSW or C&D landfills without special permitting or manifest requirements.

Florida, Texas, New York, and California all lack special disposal requirements for mold-remediation waste. The sole exception applies when mold co-occurs with regulated materials: if Condition 3 remediation uncovers asbestos or lead, those

materials are governed by their own regulatory frameworks and require separate handling and disposal.

The Scope 3 implication: Standard EPA WARM v16 landfill emission factors apply to all mold remediation debris. There is no regulatory category requiring hazardous waste incineration, permitted treatment facilities, or elevated disposal factors for mold waste. Do not apply contamination premiums to mold waste disposal emission calculations.

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Desiccant vs. Refrigerant Dehumidifier: Corrected Energy Factor

The Category 1 table does not distinguish between refrigerant-based (compressor) and desiccant dehumidifiers. For mold remediation in cold environments — unheated crawl spaces, winter deployments, structures with disrupted HVAC — desiccant units are the only viable option below approximately 50°F (10°C). Their energy consumption per pint of moisture removed is substantially higher than the refrigerant default.

TECHNOLOGY	ENERGY EFFICIENCY	OPERATING RANGE	RCP FACTOR (KWH/PINT)
Refrigerant (LGR compressor)	~1.8 L/kWh (ENERGY STAR IEF)	Above ~50°F / 10°C	0.22–0.35
Desiccant (silica gel + PTC heater)	~0.5–0.8 L/kWh	Down to -4°F / -20°C	0.50–0.80

For any mold job where desiccant dehumidifiers are deployed, use the **0.50–0.80 kWh/pint** range rather than the standard refrigerant factor. Document dehumidifier type in job equipment records. The difference is not trivial: a

desiccant unit running at 0.65 kWh/pint generates approximately 2–3× the equipment energy emissions of an equivalent-capacity LGR unit on the same job.



Antifungal Treatment Emission Factors: Updated and Corrected

Borax-Based Treatments

Borax (sodium tetraborate) has published lifecycle assessment data from a peer-reviewed MDPI Sustainability study (2022, 14(3), 1787): borax anhydrous carries a GWP of approximately **495 kg CO₂e per functional unit**, with steam during refinement contributing 46% of the total impact. The per-kg figure requires verification against the study's functional unit declaration, but the borax production process is energy-intensive relative to its inorganic simplicity, driven by mining, drying, and purification operations. The EPA EEIO inorganic chemical proxy of 1.1 kg CO₂e/kg currently in the table is a reasonable approximation pending manufacturer-specific EPD data. Flag as estimated.

Tea Tree Oil and Botanical Treatments

Tea tree oil (*Melaleuca alternifolia*) carries no published lifecycle emission factor as of April 2026. Essential oil production is energy-intensive: steam distillation yields are approximately 1–2% of raw plant material by weight, meaning roughly 50–100 kg of plant material is processed per kg of oil extracted. Combined with agricultural inputs, transport, and distillation, the production footprint is estimated at **15–50 kg CO₂e per kg of tea tree oil** — substantially higher per kg than synthetic biocides, though applied in much smaller quantities. The RCP treats tea tree oil treatments as a **data gap**. Apply the EPA EEIO chemical

manufacturing proxy (2.8 kg CO₂e/liter of diluted product) and flag as estimated pending manufacturer disclosure.

Copper-Based Fungicides

Copper production averages approximately **2.6 tonnes CO₂e per tonne of copper** (peer-reviewed industry average). Copper sulfate processing adds further energy overhead. Estimated emission factor for copper sulfate fungicide treatments: **3–5 kg CO₂e/kg**. Apply where copper-based treatments are used and flag as estimated. No EPA-specific factor exists for copper sulfate in the WARM or EF Hub databases.

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CONTINUE READING

- [Water Damage Restoration: Scope 3 Guide](#)
- [Asbestos and Hazmat Abatement: Scope 3 Guide](#)
- [Biohazard and Trauma Scene Cleanup: Scope 3 Guide](#)

SEE ALSO

- [RCP Emission Factor Reference Table](#)
- [RCP Carbon Avoidance Framework](#)
- [RCP Proxy Estimation Guide](#)

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