



GEORGIA

DEPARTMENT OF NATURAL RESOURCES

ENVIRONMENTAL PROTECTION DIVISION

Ethylene Oxide (EtO) in Georgia

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Chief, Air Protection Branch

AAPCA Spring Meeting
Atlanta, GA
April 8, 2026



COMMERCIAL STERILIZERS

It's worth knowing what's really going on.

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Residents plead with state to not trust Sterigenics to perform air tests

Liken plant handling its own air tests for potentially cancer-causing gas to “fox guarding the henhouse”



← Caption



2019 PUBLIC MEETING COBB COUNTY CIVIC CENTER





GEORGIA EPD REQUIREMENTS

- **Georgia EPD required four commercial sterilizers to:**
 - Retest all existing air pollution controls on sterilization chamber.
 - Install back vent emission controls (if they didn't already have them).
 - Install a dry bed adsorber system and negative pressure permanent total enclosure (PTE) to capture and control fugitive EtO.
 - Operate a continuous emission monitoring system (CEMS) on all stacks.
 - Implement a leak detection and repair program.
 - Report all releases of ethylene oxide to EPD within 24 hours (SB 426).
 - Obtain new air permits documenting new requirement.



SUMMARY OF EtO MODELING RESULTS

Facility Name	Modeled EtO Emissions (lbs/year)	Excess Cancer Risk per 1M People at Nearest Residence
Sterigenics (before)	206.1	61
Sterigenics (after)	84	4.6
BD – Covington (before)	657.4	84
BD – Covington (after)	76.4	1.3
BD – Madison (before)	417.3	Not Modeled
BD – Madison (after)	49.8	0.6
Sterilization Services of Georgia (before)	1,339.1	201.4
Sterilization Services of Georgia (after)	26.9	4.2



EPA RULEMAKING

- **April 11, 2023** – EPA proposed updates to the NESHAP for EtO Sterilization Facilities (88 FR 22790).
- **April 5, 2024** – EPA finalized the new NESHAP for EtO Sterilization Facilities (89 FR 24090).
- **July 17, 2025** – Presidential 2-year exemption for all relevant compliance dates.
- **March 17, 2026** – EPA proposed reconsideration of the 2024 NESHAP for EtO Sterilization Facilities (91 FR 12700).



STERIGENICS

Future required and currently demonstrated EtO control efficiency at Sterigenics.

Source of EtO	Demonstrated EtO Control Efficiency (%)	2024 NESHAP Required EtO Control Efficiency (%)	Proposed Reconsideration Required EtO Control Efficiency (%)
SCV ¹	99.998	99.99	99.9
CEV ²	99.95	99.9	99
ARV ³	99.96	99.9	99.6
Group 1 ⁴	98.24	PTE, 98	80
Group 2 ⁵	98.24	PTE ⁶ , 98	1 PPM or 80%

¹ *Sterilization chamber vent (SCV)* means the point (prior to the vacuum pump) through which the evacuation of EtO from the sterilization chamber occurs following sterilization or fumigation, including any subsequent air washes.

² *Chamber exhaust vent (CEV)* means the point(s) through which EtO-laden air is removed from the sterilization chamber during chamber unloading following the completion of sterilization and associated air washes.

³ *Aeration room vent (ARV)* means the point(s) through which the evacuation of EtO-laden air from an aeration room occurs.

⁴ *Group 1 room air emissions* mean emissions from indoor EtO storage, EtO dispensing, vacuum pump operations, and pre-aeration handling of sterilized material.

⁵ *Group 2 room air emissions* mean emissions from post-aeration handling of sterilized material.

⁶ *Permanent total enclosure (PTE)* means a permanently installed enclosure that meets the criteria of Method 204 of appendix M, [40 CFR part 51](#) for a PTE. A PTE completely surrounds a source of emissions such that all EtO emissions are captured, contained, and directed to a control system or to an outlet(s).



BD-MADISON and BD-COVINGTON

Future required and currently demonstrated EtO control efficiency at **BD-Madison**.

Source of EtO	Demonstrated EtO Control Efficiency (%)	2024 NESHAP Required EtO Control Efficiency (%)	Proposed Reconsideration Required EtO Control Efficiency (%)
SCV	99.7	99.99	99.9
CEV	95	99.9	99
ARV	97	99.9	99.6
Group 1	98.74	PTE, 98	80
Group 2	99.77	PTE, 98	1 PPM or 80%

Future required and currently demonstrated EtO control efficiency at **BD-Covington**.

Source of EtO	Demonstrated EtO Control Efficiency (%)	2024 NESHAP Required EtO Control Efficiency (%)	Proposed Reconsideration Required EtO Control Efficiency (%)
SCV	99.9	99.99	99.9
CEV	98	99.9	99
ARV	97.81	99.9	99.6
Group 1	99	PTE, 98	80
Group 2	98	PTE, 98	1 PPM or 80%



SSG and KPR

Future required and currently demonstrated EtO control efficiency at **Sterilization Services of Georgia**.

Source of EtO	Demonstrated EtO Control Efficiency (%)	2024 NESHAP Required EtO Control Efficiency (%)	Proposed Reconsideration Required EtO Control Efficiency (%)
SCV	100	99.99	99.9
CEV	99.997	99.9	99
ARV	98.7	99.9	99.6
Group 1	94.6	PTE, 98	80
Group 2	98.9	PTE, 98	1 PPM or 80%

Future required and currently demonstrated EtO control efficiency at **KPR**.

Source of EtO	Demonstrated EtO Control Efficiency (%)	2024 NESHAP Required EtO Control Efficiency (%)	Proposed Reconsideration Required EtO Control Efficiency (%)
SCV	99.92	99.99	99.9
CEV	Not Applicable	Not Applicable	Not Applicable
ARV	Not Applicable	Not Applicable	Not Applicable
Group 1	None	PTE, 80	80
Group 2	None	PTE, 80	1 PPM or 80%



SUMMARY OF EtO MODELING RESULTS

Facility Name	Modeled EtO Emissions (lbs/year)	Excess Cancer Risk per 1M People at Nearest Residence
Sterigenics (before)	206.1	61
Sterigenics (after)	84	4.6
BD – Covington (before)	657.4	84
BD – Covington (after)	76.4	1.3
BD – Madison (before)	417.3	Not Modeled
BD – Madison (after)	49.8	0.6
Sterilization Services of Georgia (before)	1,339.1	201.4
Sterilization Services of Georgia (after)	26.9	4.2



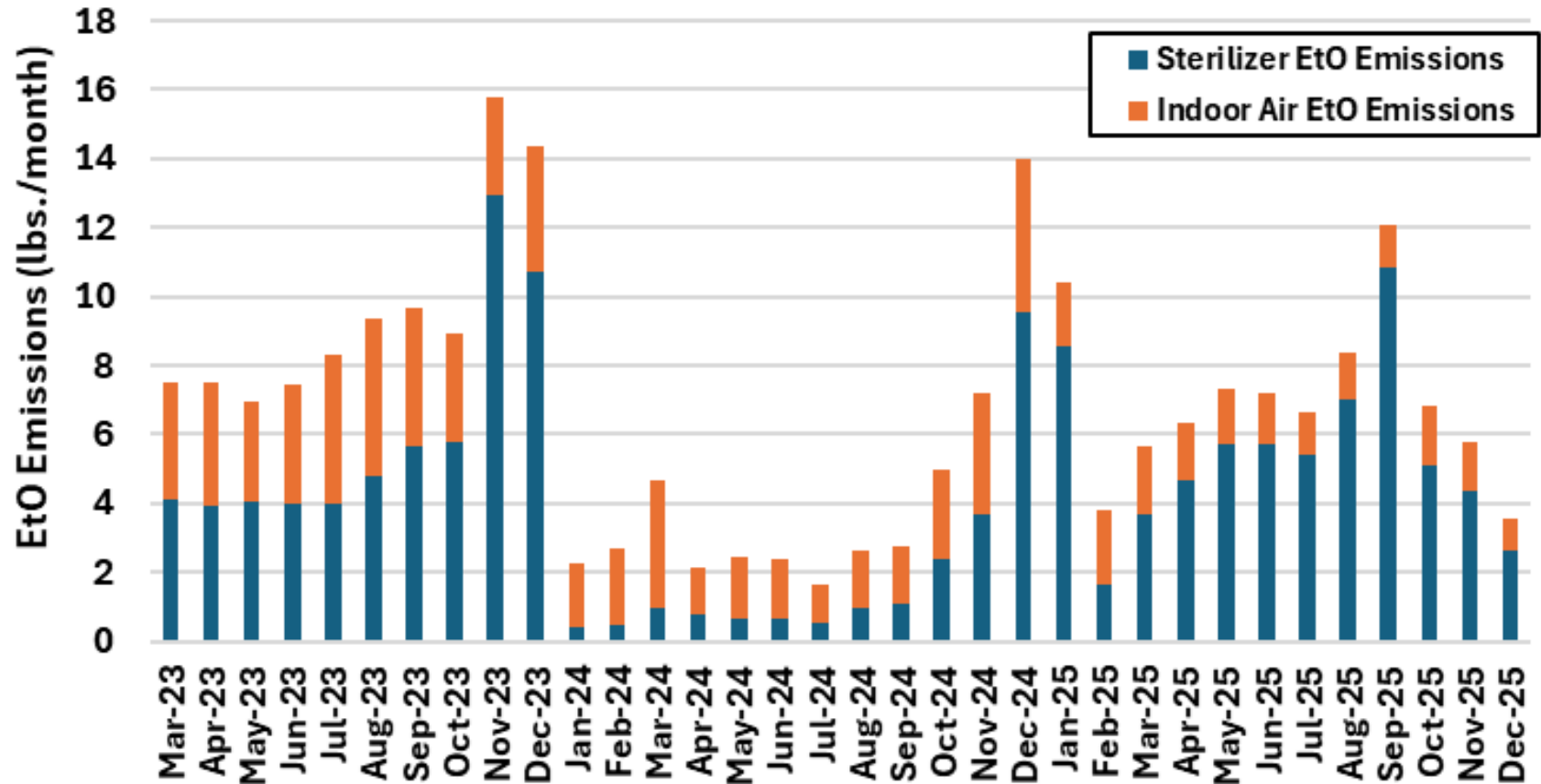
2025 ANNUAL EtO EMISSIONS

Annual 2025 EtO emissions based on CEMS

Facility Name	Modeled EtO Emissions (lbs/year)	Excess Cancer Risk per 1M People at Nearest Residence
Sterigenics (before)	206.1	61
Sterigenics (after)	84 (83.9)	4.6
BD – Covington (before)	657.4	84
BD – Covington (after)	76.4 (84.0)	1.3
BD – Madison (before)	417.3	Not Modeled
BD – Madison (after)	49.8 (48.2)	0.6
Sterilization Services of Georgia (before)	1,339.1	201.4
Sterilization Services of Georgia (after)	26.9 (119.5)	4.2



STERIGENICS EtO EMISSIONS

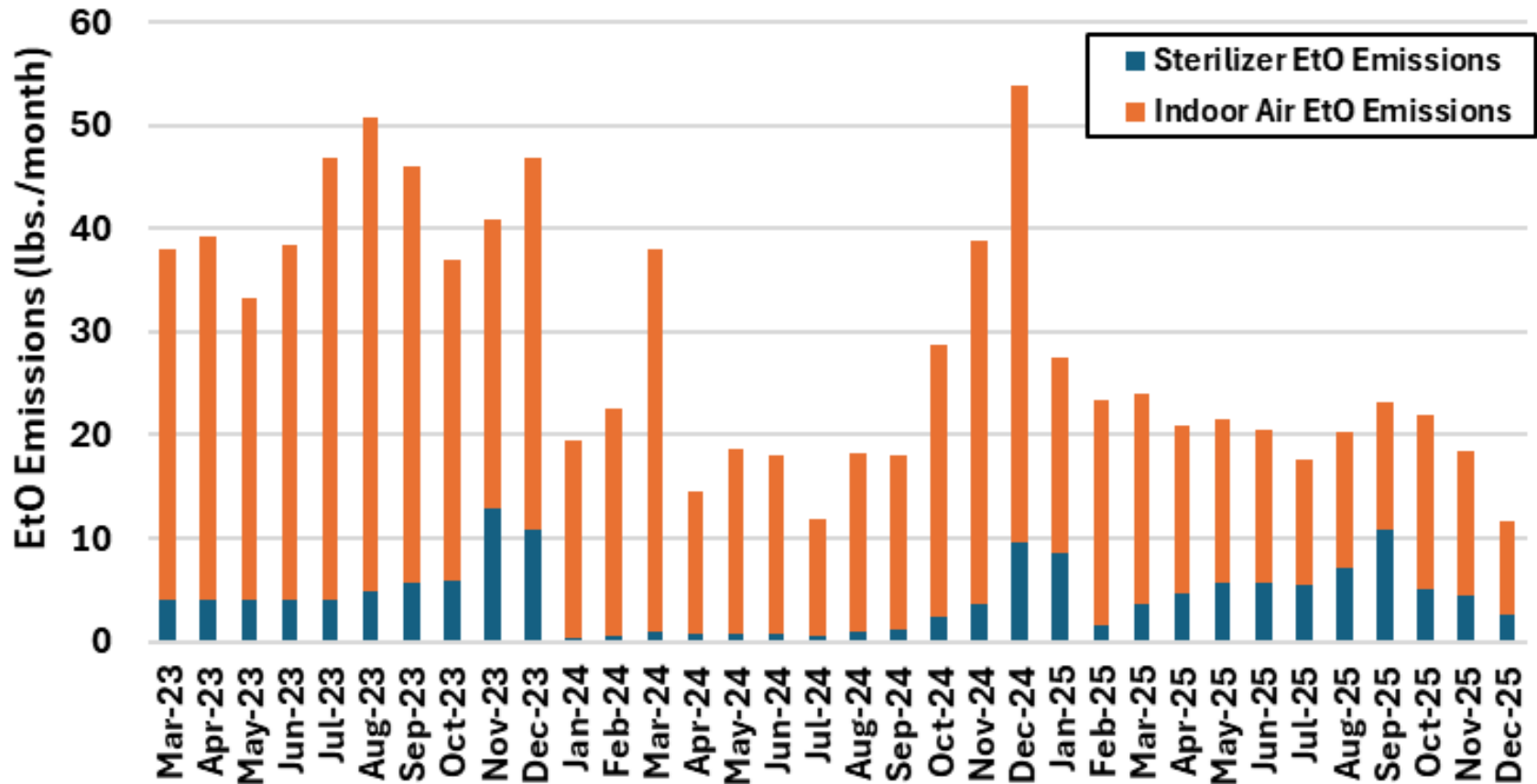


Average Sterilizer EtO Emissions = 4.3 lbs./month
Average Indoor Air EtO Emissions = 2.4 lbs./month



STERIGENICS EtO EMISSIONS

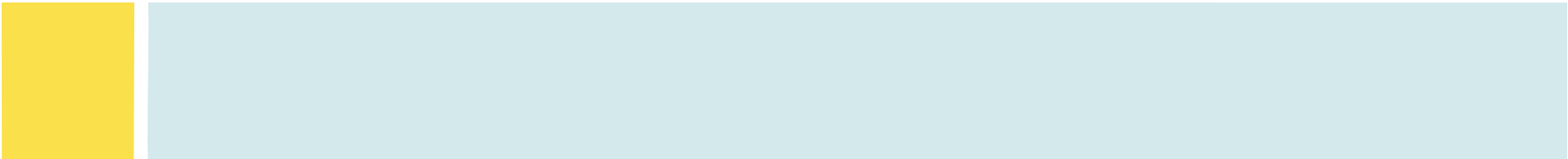
If the Indoor Air percent EtO reduction is changed from **98% to 80%**



Average Sterilizer EtO Emissions = 4.3 lbs./month
Average Indoor Air EtO Emissions = **24.2 lbs./month**



WAREHOUSES





ARTICLES AND VIDEO

- **Grist:**

- <https://grist.org/accountability/ethylene-oxide-georgia-medical-supply-warehouses-worker-health/>

- **WANF-TV:**

- <https://www.atlantaneewsfirst.com/2024/02/29/cancer-stricken-workers-claim-company-exposed-them-toxic-gas/>

- **YouTube:**

- https://www.youtube.com/watch?v=M5IG_YejG9E&t=335s



HOW IT ALL BEGAN

- Becton Dickinson (BD) in Covington, GA is a commercial sterilizer facility.
- Enforcement was taken against BD for failure to close a vent resulting in an uncontrolled release of EtO emissions from the rooftop vent.
- As part of an Order of the Court, the facility was required to perform testing at the near-by BD Global Distribution Center (GDC) warehouse to examine cumulative EtO emissions that might increase risks to residents.



BD GDC EMISSIONS TESTING

- Samples were taken inside the warehouse near roof vents and outside the warehouse to collect ambient background concentrations.
- The indoor concentrations of EtO were multiplied by the vent flow rates over the course of a 24-hour period to calculate daily emission rates.
- The daily emission rates were over the minimum HAP emission rate (15 lbs/day) requiring an air permit.
 - **Annual emissions rate was 6,800 lbs/year!!**
- This led to further enforcement for operating a facility without an air permit.

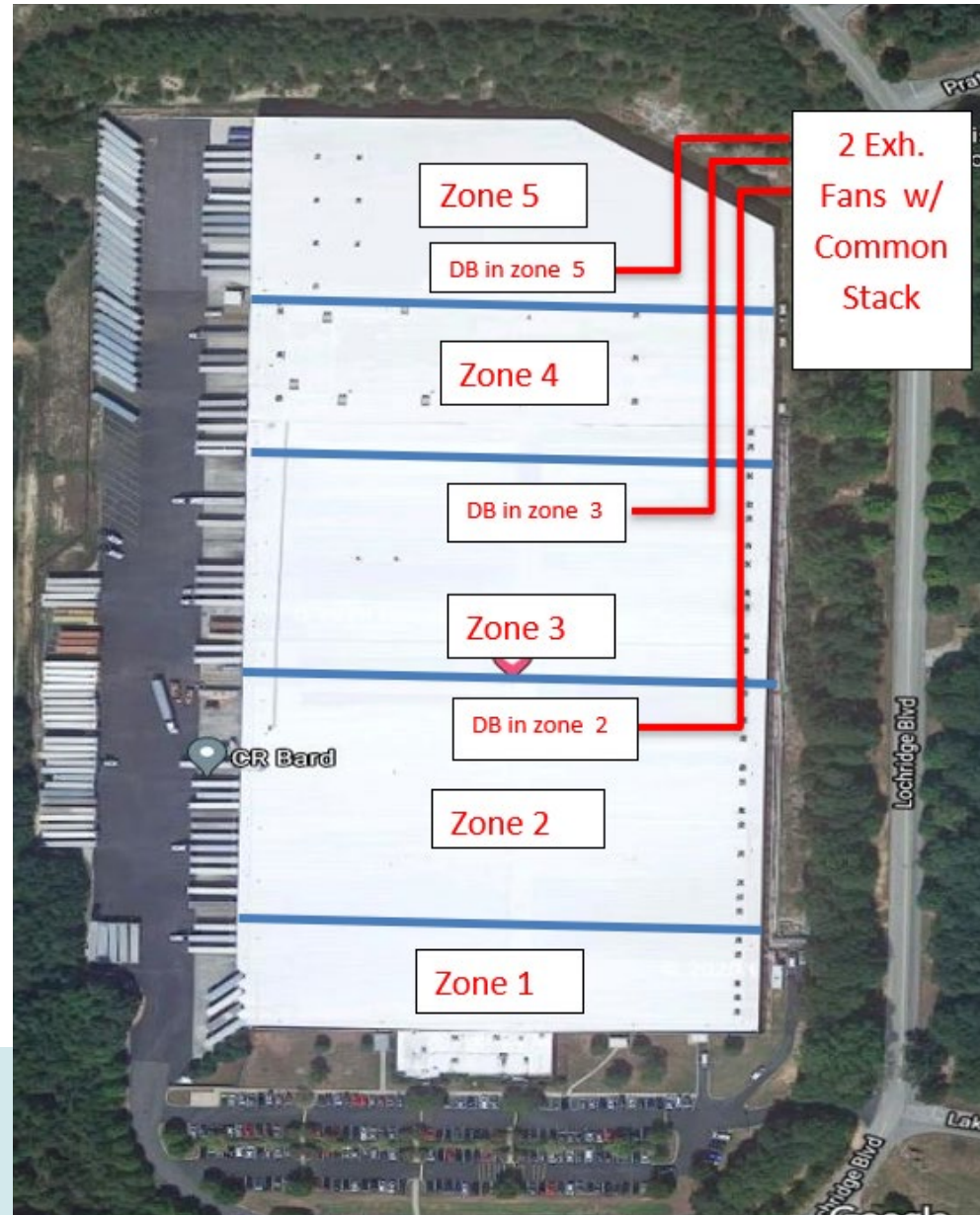


BD GDC CONTROLS

- EPD required the facility to install EtO controls.
- The most common control technology for fugitive EtO emission is the dry bed adsorber system.
 - This system can handle high volume/low concentrations air streams with 95% - 99% control efficiencies.
- In addition to the control device, the warehouse needs to be fully enclosed and under negative pressure so that all air contacting the sterilized product is collected and treated.
- One set of testing showed the residual EtO can remain in product up to 10 days after aeration.

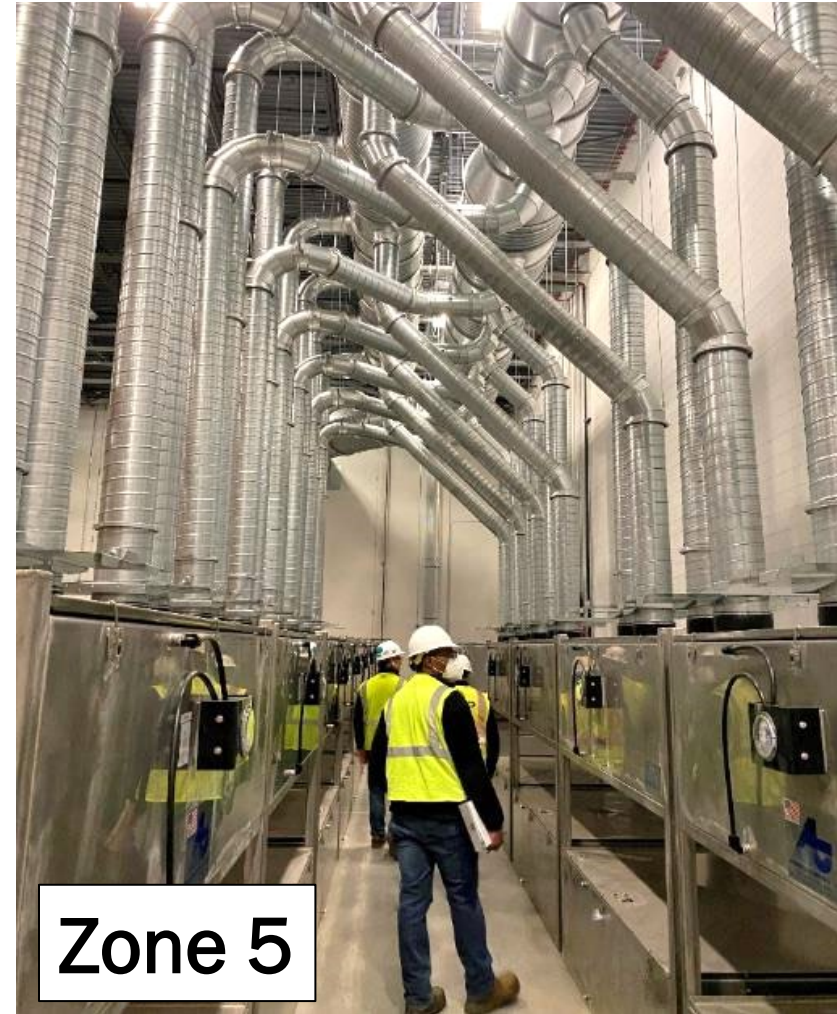


BD GDC FACILITY LAYOUT





BD GDC DRY BED SCRUBBERS





SAMPLE LOCATION AND EXHAUST STACK





OTHER WAREHOUSES?

- **EPD's Stationary Source Compliance Program looked for other medical warehouses.**

Facility	Needs a Permit?
BD Global Distribution Center	Yes
KPR Warehouse	Yes
ConMed	Yes
Medline	No
Stradis	No
Second BD Covington Warehouse	No (Shut Down)



STATUS UPDATE

■ BD Global Distribution Center

- Controls (facility PTE) were commissioned in Fall of 2020.
- Permit issued on **July 02, 2024**.

■ KPR Warehouse

- Controls (truck bay PTE) became operational in April 2024.
- Permit is scheduled to be issued by **May 1, 2026**.

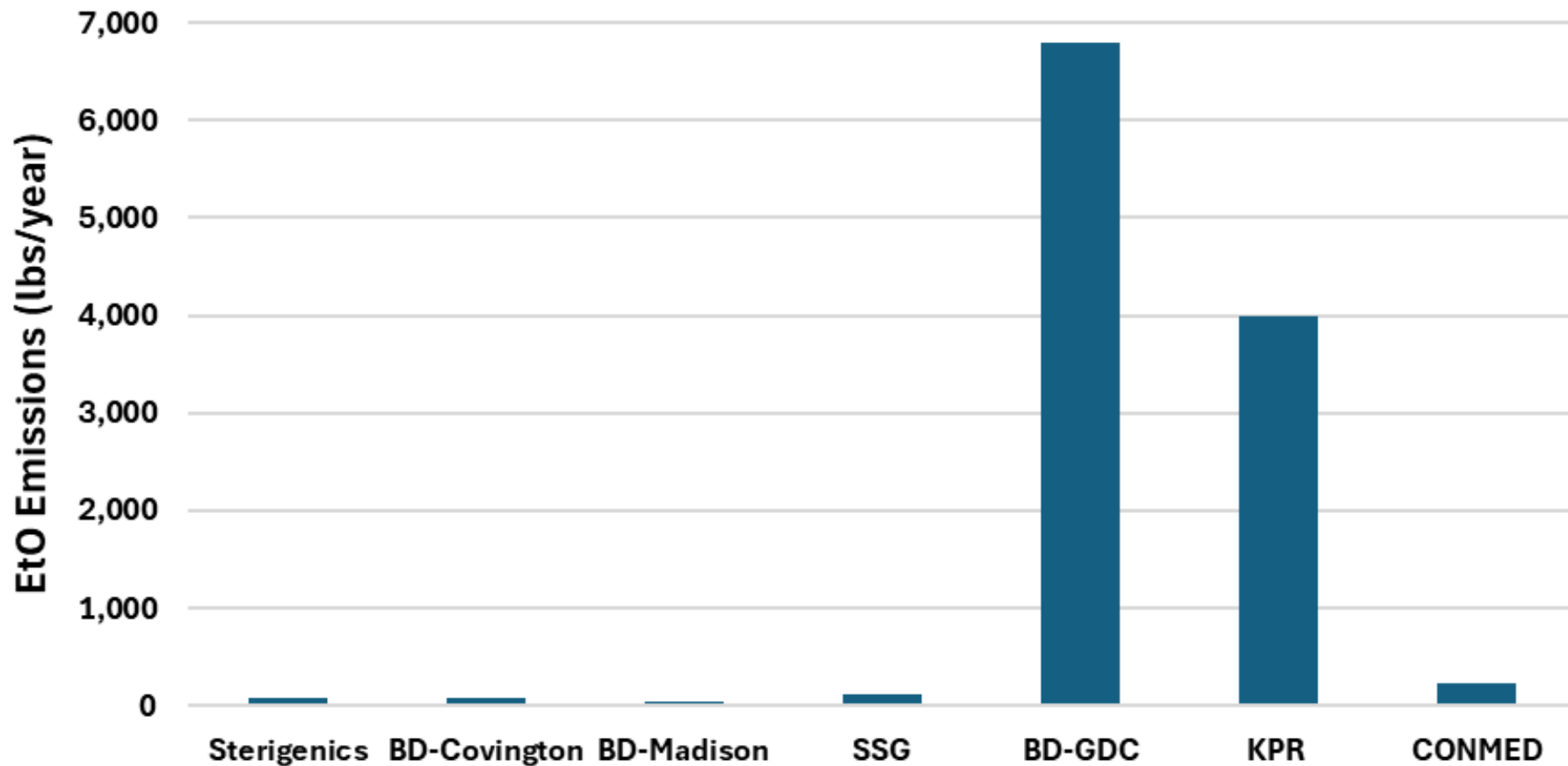
■ CONMED

- Waiting on permit to install controls (truck bay PTE).
- Permit is scheduled to be issued by **May 1, 2026**.

Facility Name	Annual EtO Emission <u>Before</u> Controls Applied (lbs/year)	Assumed Emission Control Efficiency (%)	Annual EtO Emission <u>After</u> Controls Applied (lbs/year)	Highest Modeled Excess Cancer Risk per 1M People at Nearest Residence <u>After</u> Controls Applied
BD GDC	6,800	90	680	12.9
CONMED	225.2	90	22.7	2.2
KPR	4,000	95	200	N/A - Not Submitted Yet

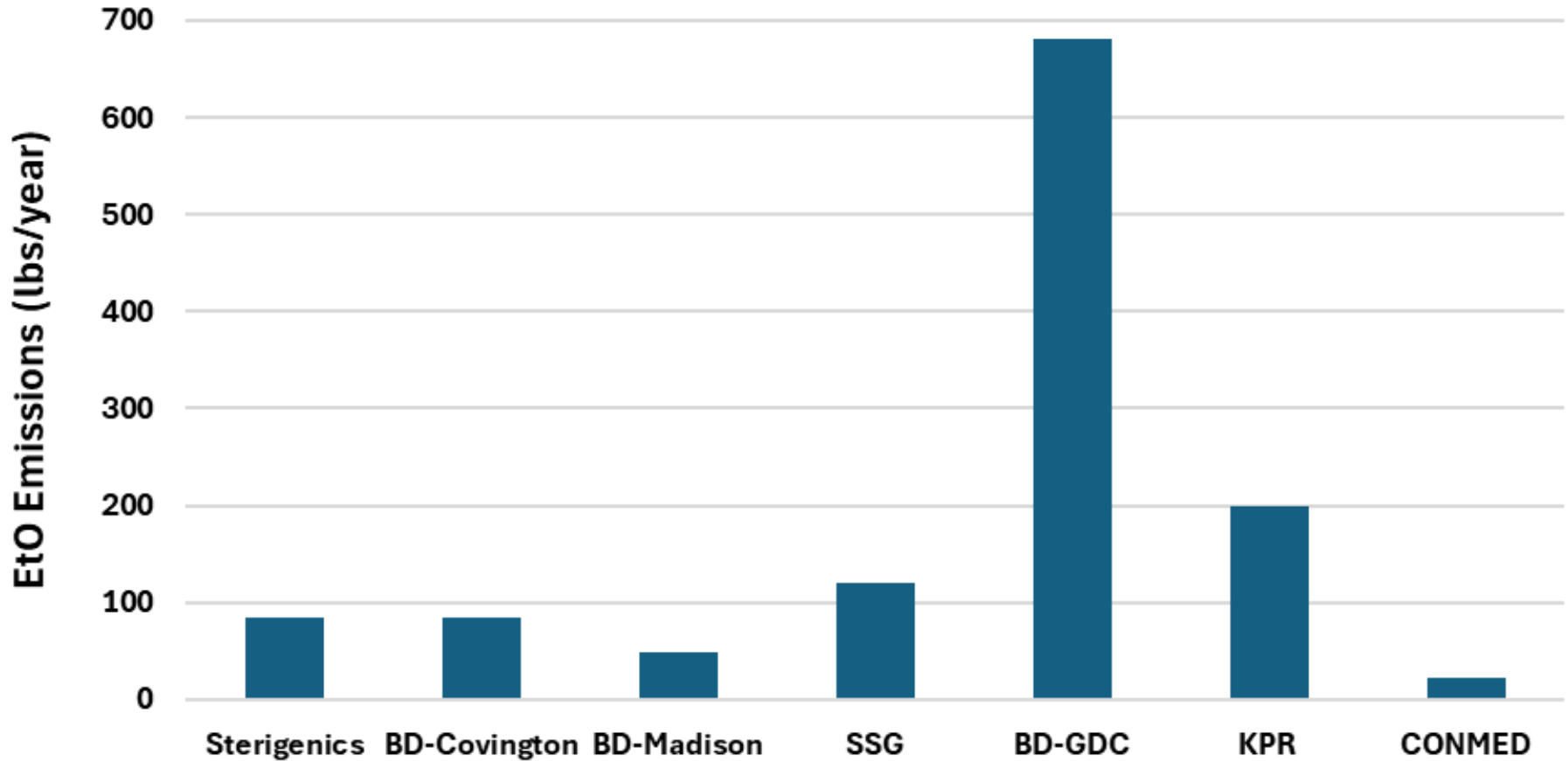


WITHOUT WAREHOUSE EtO CONTROLS



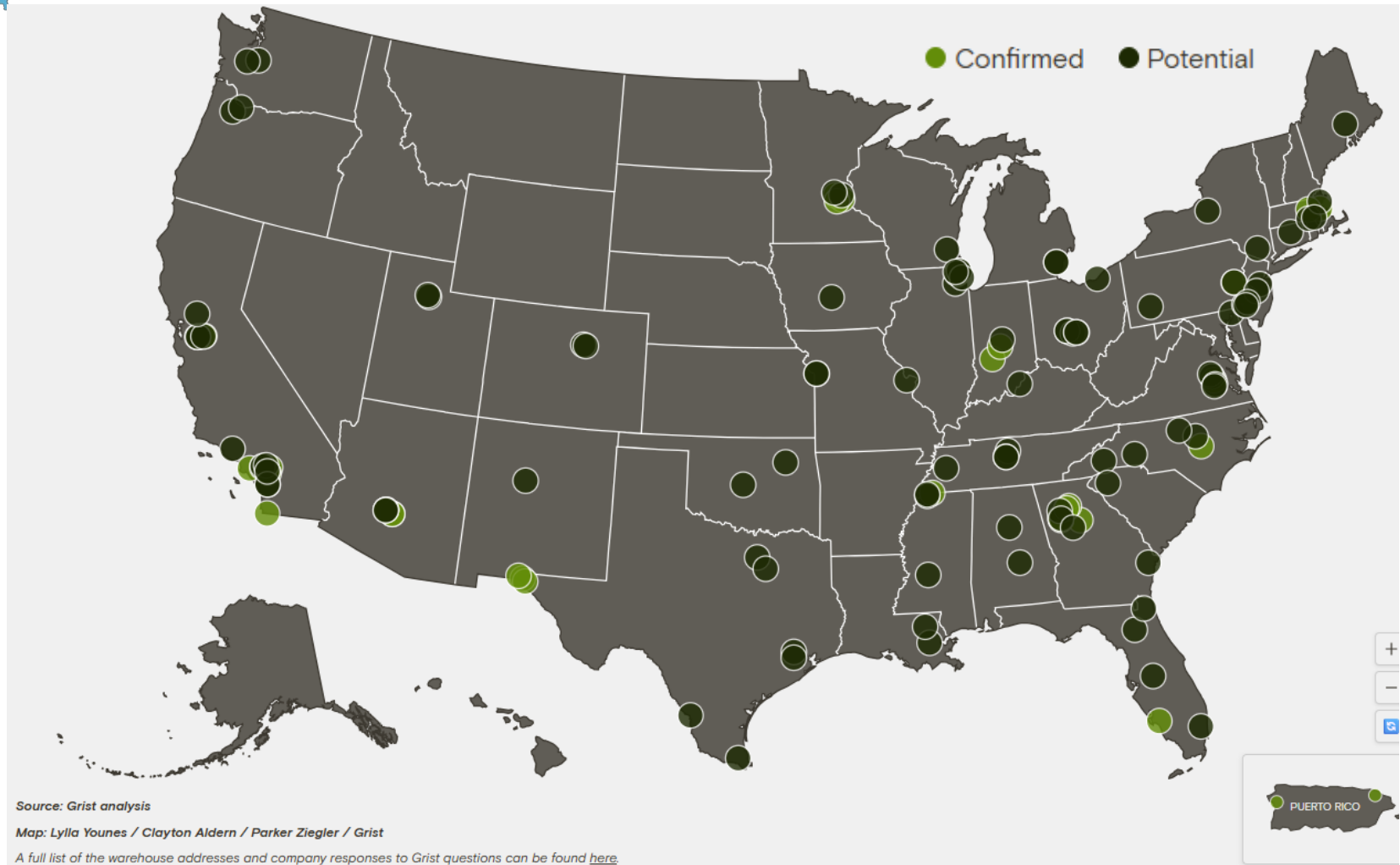


WITH WAREHOUSE EtO CONTROLS





OTHER WAREHOUSES?



<https://grist.org/health/ethylene-oxide-el-paso-texas-unregulated-toxic-warehouse/>



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