

Test Plan  
for the  
Performance Testing of the Fugitive Emissions Control System Upgrades  
at

Becton Dickinson and Company (BD)  
Urology and Critical Care Division

Covington, Georgia

Proposed Test Dates:

31 March 2020

Submitted By:

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## **I. Introduction**

Paragraph 13 of Attachment A to the October 28, 2019 Consent Order provides; “in accordance with an EPD-approved plan, BD shall conduct an initial demonstration of the fugitive emissions control system upgrades proposed in the permit application for the BD Covington facility no later than March 31, 2020.”

In compliance with Attachment A to the October 28, 2019 Consent Order, BD is providing a test plan for the fugitive emissions control system upgrades proposed in the permit application of the BD Covington facility.

Upon completion of the system installations and placement into service, the following testing will be conducted, consistent with the outline provided in Attachment F to the air permit application submitted on October 31, 2019.

Each system’s control efficiency for EO will be tested and demonstrated on a concentration basis by withdrawing exhaust air from the ductwork at the inlet and outlet side of a dry bed into Summa Canisters in accordance with EPA Method TO-15.

Testing is scheduled to be performed March 31, 2020 at the BD Sterilization Operation in Covington, Georgia.

The purpose of the testing is to determine removal efficiency of ethylene oxide (EO) by the dry bed fugitive emissions control systems.

The services of a reputable contractor will be obtained to conduct the required testing. Mr. John LaMontagne, of BD, and other BD personnel, will provide on-site coordination of the testing.

## **II. Process and Control Equipment Description and Operating Conditions**

The equipment being tested is for the control of fugitive emissions of Ethylene Oxide (EO) at an existing medical device sterilization facility. The existing regulated process which includes the Sterilization Chamber Exhaust Vent, Chamber Vent, Aeration Exhaust, and Thermal Oxidizer are not being modified and are excluded from this performance test.

Testing for this equipment is specific to the additional emission control systems being installed to capture and treat fugitive emissions of EO not captured by current emissions control equipment. The new equipment to be tested includes two systems comprised of multiple Advanced Air Technologies Model DR490 “Dry Bed Scrubbers”.

System One (SYS1) will capture potential emissions from the five Sterilization Vessel Rooms (VRM1, VRM2, VRM3, VRM4, VRM5), the Vessel to Aeration Transfer Corridor (NCO1), and the EO Dispensing Room (DRM1).

System Two (SYS2) will capture potential emissions from the Work in Progress Area (WIP1) where product is stored after Sterilization and prior to shipment.

### **III. Dry Bed Validation Testing Plan**

#### **Analytical Methods**

The samples will be collected in Summa Canisters and analyzed using EPA Method TO-15 with GC/MS in the Selective Ion Monitoring (SIM) acquisition mode to determine the concentration of ethylene oxide. Analysis will be performed by Eurofins, an independent laboratory. Results will be reported in units of micrograms per cubic meter (ug/m<sup>3</sup>).

To accommodate the conditions relating to canister placement, sampling probes will be connected using flexible tubing (Teflon FEP, 1/4" OD), with the length not to exceed 5 feet.

Duplicate samples will be collected at the outlets from each dry bed system and submitted to the laboratory for two separate QC evaluations. One set of duplicates will be analyzed to evaluate the precision and repeatability of sample collection. For the other pair of duplicates, one canister will be analyzed upon receipt. The other canister will be spiked with a standard concentration of ethylene oxide and held for a period of time approximating the sample collection, shipping, and handling period. This canister will be subsequently analyzed to evaluate recovery of EtO in the matrix sampled.

#### **Initial Efficiency Assessment**

The initial performance testing will be performed during the commissioning phase of system installation as follows:

Sample duration – 4 hours

System 1: Inlet duct and outlet duct simultaneously across all of System 1.

System 2: Inlet ducts to all of the 6 dry bed sets simultaneously with the outlet stack for System 2.

Samples will be collected at a single point within each corresponding stack or duct.

Outlet stack airflow rate and moisture will be measured simultaneously by EPA Methods 1, 2, and 4.

Velocity traverses of the inlet ducts will be performed periodically during the testing.

Control efficiency will be calculated on the basis of the reduction in concentration of EO across the dry beds for each System. Mass emission rate of EO (lb/hr) will be determined using the measured outlet concentration and airflow rate.

#### **IV. Plant Entry and Safety**

General safety rules must be adhered to when inside the plant area. Visitors must first sign in at the reception area at 8195 Industrial Blvd. prior to admission to the Sterilization Facility.

Entry to the Sterilization Facility is restricted. John LaMontagne is responsible for this project. He can be reached at 770-784-6186 or 770 652-2049 (cell).