

 **Inhalation Toxicology**

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Inhalation Toxicology - Case Study T 1

**Installation of a Cigarette Smoking Machine
Replacement for a Prestigious US
University Laboratory**

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Problem Statement

A New England University laboratory had been conducting studies with an older competitor produced cigarette smoking platform but with little control over the cigarette smoke origin and concentration.

The competitor platform did not permit controlled delivery of Mainstream, Side-Stream or Combination combustion products.

Controlled delivery of tobacco smoke to the facilities existing whole-body rodent exposure systems was a required element for the upgraded system, to permit continued conduct of tobacco related cancer, heart disease, stroke, lung diseases, diabetes, and COPD research.

Ongoing animal studies using newly supplied CH Technologies (USA) cigarette smoking platform were hard scheduled and consequences of delayed availability would impact Departmental income and student projects.

CH Technologies Equipment Supplied

The Swiss manufactured CH Tech JB2090 cigarette and e-cigarette smoking machine, designed for the flexible support of a broad range of *in vivo*, *ex vivo* and *in vitro* exposure study types, as well as to controllably deliver tobacco combustion or vaping platform product, was installed into the facility

The JB2090 platform and related smoke mixing/dilution system was installed by a CH Tech Engineer for subsequent operation by students and teaching staff in the university department.



Installation Challenges

Installation evaluation and system setup identified that the new more advanced and controllable platform could not deliver the customer required/expected smoke concentrations without modification.

The CH Tech Engineer determined that smoke delivery was being impacted by chamber inlet restrictions, with consequential loss of combustion products directly to the exhaust connection.

The prior smoke generation system was found to have been delivering smoke at the required concentration, but with insufficient airflow to provide appropriate animal welfare conditions!

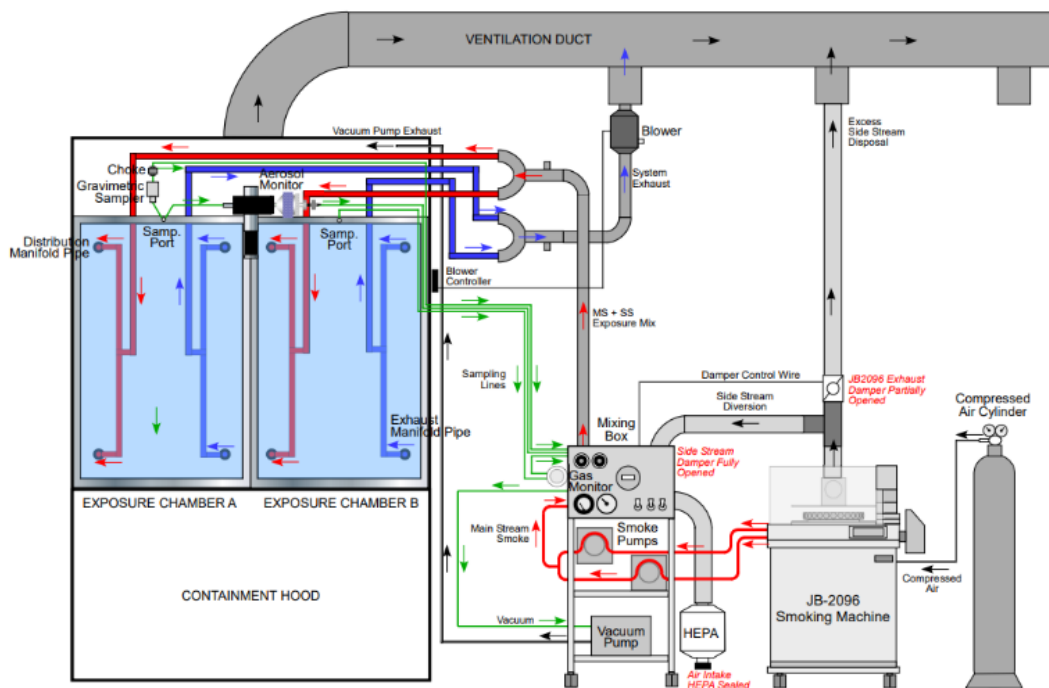
The CH Technologies Solution

Internal discussions at CH Tech both evaluated the flow restriction location and a range of potential solutions identified.

CH Tech Engineers returned to reconfigure the system. A blower was installed at the chamber outlet to boost exhaust removal and the identified restrictions in the chamber inlets were removed.

A detailed Standard Operating Procedure for the smoking machine and exposure system was provided to allow handover between operators and student intake groups. Real-time monitors were installed to accurately monitor animal exposure and environmental conditions in the exposure chambers.

Schematic of System for Mainstream and Side Stream Smoke Delivery



Client Outcome

The JB2090 cigarette smoking platform, in its final configuration, was able to deliver the client required combination of side-stream and mainstream tobacco combustion products to preexisting facility whole body chambers.

Appropriate animal welfare airflow standards during exposure are now achieved.

The greater flexibility and control offered by the CH Technologies cigarette smoking platform will permit a broader range of future study types.



For more information visit <https://chtechusa.com>

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