Expert opinions regarding Vapor-Clean

"At the MHAUS hotline consultants/professional advisory council meeting in May of 2011, we examined the evidence for the use of these devices in preparation of the anesthesia machine and several of the consultants then trialed the devices clinically. We were all impressed that the device (called Vapor-Clean) did what the investigators said it would: rapidly reduce the concentration of anesthetic gases entering into the patient from the anesthesia machine to practically zero!"

- President's Blog, July 2011, Henry Rosenberg M.D., President, MHAUS

"With the advent of the Vapor-Clean device, it would seem that the challenge of protecting MH susceptible patients from trace amounts of anesthetic vapor has been solved."

- Jeffrey M. Feldman M.D., M.S.E., New Device Simplifies Workstation Preparation for Malignant Hyperthermia-susceptible Patients, Anesthesioogy August 2011 - Volume 115 - Issue 2 - p 434

VAPOR-CLEAN

Prepare your anesthesia machine without long periods of flushing

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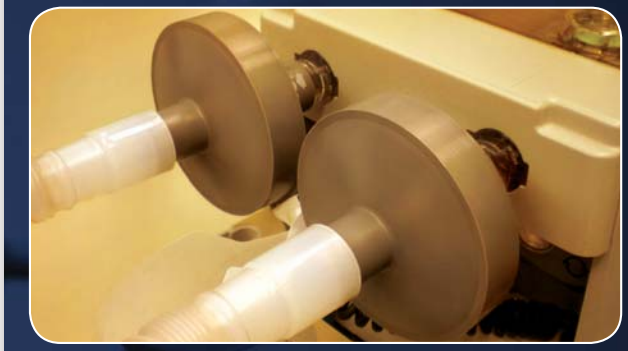
Recognized by MHAUS and leading experts as a safe, simple and fast way to prepare for MH-susceptible patients



VAPOR-CLEAN

Prepare your anesthesia machine without long periods of flushing

Dynasthetics

Be ready for MH-susceptible patients in less than 90 seconds

The internal components of modern anesthesia machines capture and hold volatile anesthetics which are released when the machine is used for a new patient. Even trace amounts of vapor can be harmful for susceptible patients[1]. Previously, flushing the anesthesia machine with high fresh gas flow for an extended time before a case was thought to help decrease the risk to susceptible patients. Now, in less than 90 seconds, Vapor–Clean activated charcoal filters reduce exposure to less than 5ppm of desflurane, sevoflurane and isoflurane molecules from reaching the patient for an entire case lasting up to 12 hours.

- Peer reviewed study shows that FDA-cleared Vapor-Clean filters lower anesthetic vapor to less than 5 ppm in less than 90 seconds[2].
- Vapor-Clean filters maintain trace anesthetic vapor levels below 5 ppm for an entire case (up to 12 hours) regardless of fresh gas flow.
- No need to flush the anesthesia machine for up to 104 minutes[2,3] prior to delivering anesthesia to an MH-susceptible patient.
- Simply connect inspiratory and expiratory Vapor-Clean filters between the anesthesia machine and a new breathing circuit to deliver a vapor-free anesthetic.

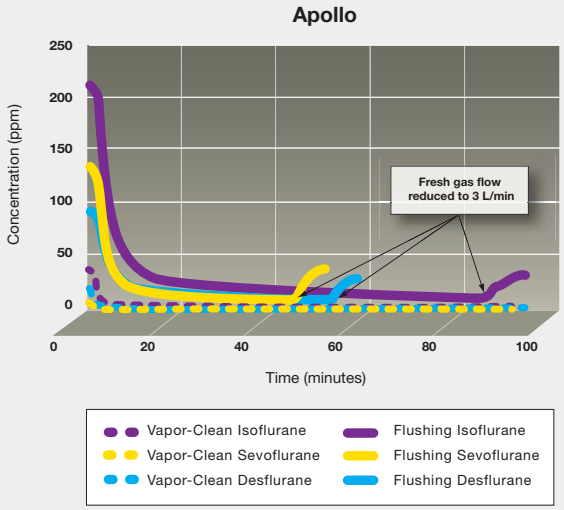
VAPOR-CLEAN

Published results

Study Data

The plot below shows data from a published study[2] showing the effect that flushing has in preparation time of a Draeger Apollo anesthesia machine without the Vapor-Clean filters. Note the rebound effect that occurs without the Vapor-Clean filters as soon as flushing is discontinued exposing patients to potentially unsafe levels of anesthetic vapor.

When the Vapor-Clean filters are used, patients are not exposed to this rebound effect as the filters are placed for the entire case[2]. The table is a summary of published studies that show the extended periods of flushing needed without the Vapor-Clean filters before modern anesthesia delivery systems can be used for MH-susceptible patients[2].



Workstation type	Anesthetic agent	Published washout time (time to inspired agent less than 5 parts per million)	Time to inspired agent less than 5 parts per million with Vapor-Clean filters
Ohmeda Aestiva	Isoflurane	54 minutes[2]	Less than 1 minute[2]
Ohmeda Aestiva	Sevoflurane	48 minutes[2]	Less than 1 minute[2]
Ohmeda Aestiva	Desflurane	27 minutes[2]	Less than 1 minute[2]
Draeger Apollo	Isoflurane	84 minutes[2]	Less than 1.5 minutes[2]
Draeger Apollo	Sevoflurane	46 minutes[2]	Less than 1 minute[2]
Draeger Apollo	Desflurane	53 minutes[2]	Less than 1 minute[2]
Draeger Primus	Isoflurane	64 minutes[4]	
Ohmeda Aestiva	Sevoflurane	55 minutes[5]	Less than 1 minute[2]
Draeger Fabius	Sevoflurane	104 minutes[3]	

**Study demonstrated washout in less than 1 minute using activated charcoal filters (Vapor-Clean).*

The table above shows published anesthetic washout times for various anesthesia gas machines.