H_2O_2 / Plasma: Big Lies, Little Chambers

Dear sterilization solution shopper,

Selecting the best sterilization method for your practice is a critical decision. It affects your medical equipment investment, staff safety, budget and time.

We pride ourselves on providing **FACTS** backed by scientific data to better arm you to make the best decision for your practice.

Unfortunately, some of our competitors in the hydrogen peroxide sterilization market do not uphold the same values and principles and have been spreading false information to simply "make the sale."

Below in red are statements made by H_2O_2 salespeople to prospective customers regarding EO gas sterilization vs plasma. We address and debunk each with facts and resources so you can know the truth about both modalities before making your critical sterilization decision.

Quick note: Hydrogen Peroxide, H_2O_2 and **Plasma** are all different names for the same sterilant.

"ETHYLENE OXIDE (EO) IS GOING TO BE BANNED NEXT YEAR."

No. EO is not being banned, nor is it currently banned in certain areas. EO continues to be broadly used for processing food products, cosmetics, manufacturing and medical devices. It is a critical sterilant widely used to keep medical devices, implants, endoscopes, (and many more items) safe.

In fact, more than 20 billion devices (approximately 50%) sold in the U.S. annually are sterilized with EO. In many cases EO is the ONLY way these devices can be sterilized because of its highly compatible and gentle nature.

During the deadly 2015 carbapenem-resistant *Enterobacteriaceae* (CRE) outbreak, the FDA recommended four supplemental reprocessing measures, which included EO sterilization as the most effective in assuring the complete inactivation of highly resistant organisms. (**More...**)

"HYDROGEN PEROXIDE (H_2O_2) IS VERY SAFE. IT'S PROBABLY UNDER YOUR SINK AT HOME!"

Generally, household H_2O_2 (in that brown bottle) is 3% concentration,[1] while sterilization H_2O_2 is at least 50% concentration. Some sterilizers concentrate it to over 90%.[2] For comparison: Rocket fuel is 80-90%.[3]

A **recent report** chronicling a scholarly search through FDA's "MAUD" adverse event database for harm caused by H_2O_2 sterilizers revealed many reports describing several types of injuries.

"FDA IS TRYING TO GET RID OF EO."

We are very proud of our working relationships with FDA and many other regulatory agencies. Andersen has **18 FDA clearances** (all awarded since 2015) and **six regulatory marks** and **approvals** for our innovative line of sterilizers.

- We hold the **first and only FDA clearance** for **terminal sterilization of duodenoscopes** – up to 11.6 feet long and down to 1.2 mm diameter (that's very long and very narrow).
- Andersen recently won **two national awards** for our proprietary ultra-low emission technology. One of them was the **FDA Innovation Challenge**.
- Andersen representatives sit on several **FDA committees** and there is no talk of "getting rid" of EO.

"ETHYLENE OXIDE IS SUPER TOXIC, H_2O_2 / PLASMA IS NOT."

No. That is untrue. Anytime a sales representative tells you their sterilant is not toxic, you should immediately be concerned (how, then, is it killing microbes?). Below is a comparative toxicity table containing industry regulatory toxicity limits for both sterilants. As you can see, the sterilants rate very similarly.

	Ethylene Oxide	Hydrogen Peroxide
OSHA 8hr/15min **PEL**: *Permissible Exposure Limits*	**1 ppm** / 5 ppm	1 ppm / –
ACGIH 8hr/15min **TLV**: *Threshold Limit Values*	**1 ppm** / –	1 ppm / –
NIOSH 8hr/10min **REL**: *Recommended Exposure Limit*	<0.1 ppm / 5 ppm	1 ppm / –
NIOSH IDLH: *Immediately Dangerous to Life or Health*	**800 ppm**	**75 ppm**
HSE 8hr/15min **WEL**: *Workplace Exposure Limits*	**1 ppm** / –	1 ppm / **2 ppm**
CAMEO Datasheet	Ethylene Oxide	Hydrogen Peroxide

This table is provided as a convenience. Please also do your own research. Agency name acronyms link to their webpages.

The IDLH and WEL (in red) have more stringent limits for H_2O_2 than for EO – in the case of IDLH, it's 10x lower for EO. Pressure is mounting from many sides to set the as-yet undetermined **Short Term Exposure Limits** or STEL (–) for H_2O_2.

"THE INDUSTRY IS MOVING TOWARDS PLASMA. EO IS AN OLD TECHNOLOGY."

"Plasma" the word itself sounds cutting edge and new. But it's not. It's just another word for hydrogen peroxide. **Definition:** Plasma is what happens when H_2O_2 gas under deep vacuum is hit with radio frequency or microwave energy.[4]

The first H_2O_2 sterilizer hit the market in 1993 – making plasma nearly 30 years old – a "new" version came out in 1998.[4]

> It is far from true that EO technology has stagnated. Andersen received its most recent 510k FDA clearance for a new sterilizer in 2020. As mentioned above we have **18 recent FDA clearances**, the **FDA Innovation Challenge Award** and another recent **national award** for our proprietary technology.

Article continues: Hydrogen Peroxide: Big Lies, Little Chambers - Andersen Sterilizers (sterility.com)

Further topics:

- Four more H_2O_2 lies debunked
- Modality comparison
- Cabinet and chamber size comparison
- Detailed model comparison
- Concluding points