HOW TO BECOME A CONSCIOUS CONSUMER WHEN CHOOSING A HYDROGEN GENERATOR

The Asclepius Medical Grade Standard

How to Become a ***Conscious Consumer*** when choosing a Hydrogen Generator: *The Asclepius Medical Grade Standard*

Professional Background:

As a Physician Scientist, Conscious Consumer, Health Advocate as well as a patient navigating my own healing journey within the realm of complex chronic illness with two decades of experience in the health field, I have witnessed the transformative potential of molecular hydrogen therapy. However, the greatest current challenge is that today's marketplace is a *"Wild West"* of unregulated, industrial-grade hardware being rebranded for human biology.

The Solution? In order to discern which Hydrogen Generator is credible, we must all become *Conscious Consumers* and hold manufacturers accountable. We must look beyond sleek marketing pictures, influencers, and focus on the science behind safety, quality and regulatory standards.

💧BECOMING A *CONSCIOUS CONSUMER* WHEN CHOOSING A HYDROGEN GENERATOR💧

To advocate for our own health, we must understand the mechanics of the devices we bring into our homes. Molecular hydrogen is made via electrolysis, but not all electrolysis is created equal.

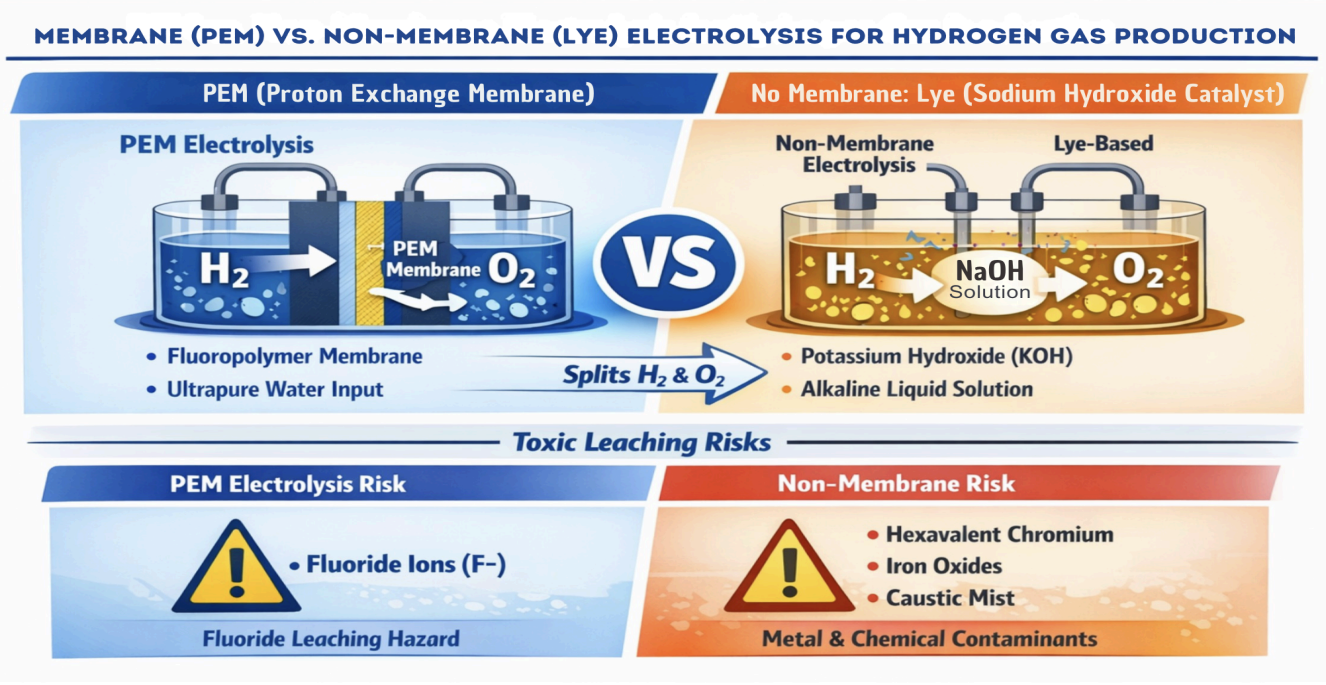
I. The Mechanics of Electrolysis: Two Primary Architectures

Electrolysis is the process of using electrical energy to split water (H20) into hydrogen (H2) and oxygen (02). In a clinical context, the method of separation is the defining factor for safety and purity. The Asclepius Medical Grade Hydrogen Generator uses the No Membrane: Lye technology for hydrogen gas production. The following information explains in great detail why this is the preferred method for human use.

1. Proton Exchange Membrane (PEM) Electrolysis

PEM technology utilizes a solid polymer electrolyte—typically a fluoropolymer membrane like **Nafion™**—to separate the anode and cathode.

- **Mechanism**: Ultrapure water is supplied to the anode, where it is oxidized into oxygen, electrons, and hydrogen ions (protons).
- **Separation**: The protons migrate through the acidic membrane to the cathode, where they combine with electrons to form H2 gas.
- **Design Intent**: This system was originally developed for industrial and aerospace applications requiring high-pressure output and compact footprints.



2. Non-Membrane Alkaline Electrolysis (Lye-Based)
This mature technology uses a liquid alkaline electrolyte (typically Potassium Hydroxide (KOH), or Sodium Hydroxide (NaOH) to facilitate ion transport.

- **Mechanism**: Hydroxide ions (OH-) are transported through the liquid solution from the cathode to the anode.
- **Separation**: Hydrogen is generated at the cathode while oxygen is generated at the anode.
- **Industrial Origin**: Most non-membrane units on the market are modified industrial welding or carbon-cleaning machines.

II. The Paradox of Production: Toxic Leaching Risks

While both methods produce hydrogen, they introduce significant chemical risks if the unit is not specifically engineered for human biology.

1. The PEM Risk: Fluorocarbon and Fluoride Leaching
The core of a PEM unit is a membrane made of **perfluorosulfonic acid polymers**. Under the intense electrochemical stress and heat of operation, these membranes can degrade.

- **Leaching**: This degradation releases **Fluoride ions (F-)** or **Ammonium Fluoride** (a toxic substance) into the inhalation gas.
- **Manufacturer Warning**: **DuPont™**, the manufacturer of Nafion™ membranes used in most industrial grade hydrogen generators on the market, explicitly states that these materials are **not intended for medical applications** involving internal body contact. They warn that these industrial membranes are not certified for biocompatibility in human systems.

2. The Alkaline Risk: Metal Oxides and Caustic Mists
Lower-grade alkaline units (often repurposed industrial welding machines) use non-biocompatible stainless steel electrodes.

- **Corrosion**: High concentrations of lye can cause these electrodes to erode, releasing **Iron Oxides (Fe3O4)** and hazardous **Hexavalent Chromium (Cr6)**.
- **Pulmonary Hazard**: Hexavalent Chromium is a known human carcinogen, and inhaling caustic electrolyte "mists" can cause respiratory damage.

III. The *Conscious Consumer's* Safety Checklist

1. Explosion Threshold: Is it Safely Under 4%?

Most companies neglect the fact that hydrogen gas is *ignitable at a 4.7% concentration in air.* Many unregulated devices output gas at levels that pose a genuine risk of detonation or injury.

Before discovering the Asclepius, I owned and used several Hydrogen-Oxygen (HHO) devices that produced gas levels exceeding recommended safety limits—without built-in safety shutoffs or meaningful acknowledgment from the companies selling them. Due to a lack of guidance and education from manufacturers, many users were unknowingly inhaling above safe thresholds, and there have been reported cases of explosions and resulting injuries.

Most companies were either totally ignorant of or could not verify whether their generators produced hydrogen gas under 4% volume air. When asked for proof, they often stopped responding or made unsupported claims. In contrast, the Asclepius does not rely on claims—it provides published research showing that hydrogen levels in users' exhaled breath and surrounding air remained under 4%, based on measurements from multiple participants.

- **The Asclepius Proof**: Verified by published peer-reviewed studies (PMC8092144), the Asclepius ensures that even with a 66% concentration, the exhaled breath and ambient room concentration remain under 4.7% H2 volume by air.

"As shown in Table 2, during the normal operation, even H2 concentration at the output of the nebulizer and nasal tube is around 64–67%, the H2 concentration around the subject user is less than 1% and the H2 concentration of exhaled breath of the subject user is less than 4%, both of which are less than the critical explosive 10% H2 concentration in the mixture of hydrogen and air (or oxygen).57,64,65,66 Therefore, during normal operation, in the event there is unexpected flame or ignition close to the subject user, it is almost unlikely to incur explosion or detonation due to the fact that the H2 concentration surrounding the subject user is less than 4%." Reference - https://pmc.ncbi.nlm.nih.gov/articles/PMC8092144/

- **Conscious Consumer Question:** *Consider asking the manufacturer: "Can you provide a published study or substantiated proof demonstrating your device stays under the 4.7% explosion threshold safety ignition limit during normal operation?"*

2. Therapeutic Dosing Efficacy: 3L/min Flow Rate at Sub-Explosive Concentrations

A hallmark of the **Conscious Consumer** is the ability to distinguish between "trace" output and "therapeutic" dosing. Most consumer-grade generators output a mere **400-600mL/min,** often over 4.7% H2 volume of air safety threshold entering into ignitable ranges. For many navigating chronic illness, these levels fail to produce significant clinical shifts. The Asclepius platform redefines this standard by delivering a high-concentration **3L/min** output while maintaining **under 4.7% H2 volume by air** strict safety parameters.

- **The Asclepius Advantage**: Delivers **3L/min** of gas while **UNDER 4.7%** - this method has been patented specific to this machine. There are machines on the market doing 3L/min yet over 4.7% H2 threshold, not adhering to safety principles.
- **Enhanced Saturation via Graham's Law:** From a biochemical perspective, the 3L/min output is more effective due to the physics of gas diffusion. This has to do with **Diffusion Velocity** according to

  Graham's Law, the rate of gas diffusion is inversely proportional to the square root of its density. The higher concentrations of H2 lower the overall density of the inhaled gas mixture resulting in **Reduced Driving Pressure.** This reduction in density, coupled with the **Bernoulli Principle**, results in a greater diffusion speed and lower pressure, allowing for more rapid and **Efficient Saturation** of molecular hydrogen in the body when compared to lower-output units.

Scientific Note: Users who have tried lower output machines consistently report that minutes on the Asclepius achieve what previously took hours on underpowered 400-600mL/min machines.

"Especially, Graham's Law of diffusion states that the rate of diffusion of one gas is inversely proportional to the square root of the density of the gas[19] and the Bernoulli principle also states that an increase in the speed of a fluid occurs simultaneously with a decrease in pressure.[20] The higher the H2 concentration in the inhaled gas, the lower the density of the inhaled gas. ***Therefore, the inhaled gas with higher H2 concentration then has the greater diffusion speed and lower pressure. Thus, it will reduce the driving pressure for human body to breathe the inhaled gas with higher H2 concentration****"*
Reference - https://pmc.ncbi.nlm.nih.gov/articles/PMC8092144/

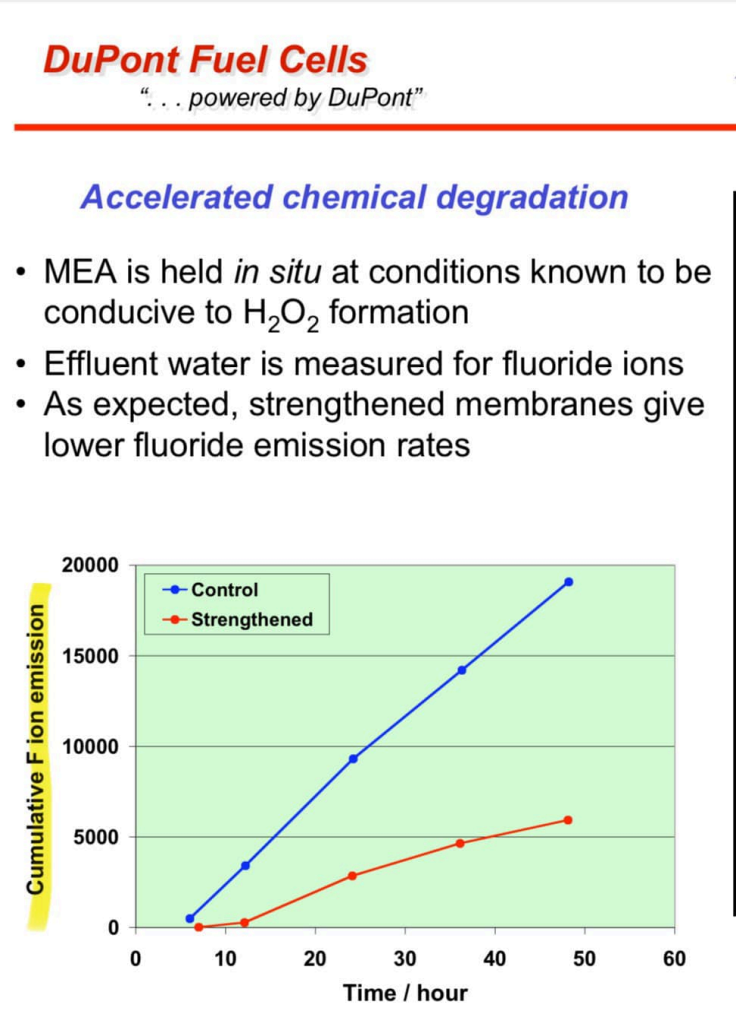
- **Conscious Consumer Question**: *Consider asking the manufacturer: "Does your generator do 3L/min while simultaneously maintaining the 4.7% explosion threshold safety ignition limit?"*

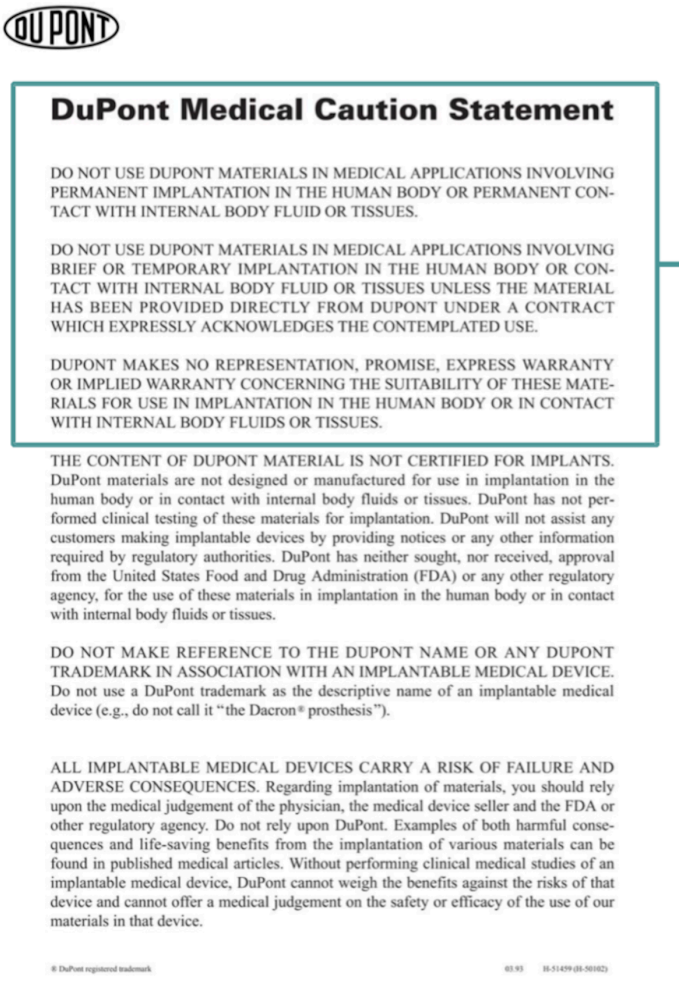
3. Material Biocompatibility: Medical vs. Industrial Grade

As a **Conscious Consumer**, you must recognize that because hydrogen is the smallest molecule in nature, it possesses a unique "carrier" effect, potentially transporting leached device materials directly into your internal tissues. Most unregulated generators on the market prioritize industrial efficiency over biological safety, leading to two primary contamination risks.

➢ **The PEM Hazard: Fluorocarbon Leaching**

Many consumer units utilize **Proton Exchange Membranes (PEM)**, often manufactured from fluoropolymers like Nafion™ (N117). While effective for industrial fuel cells and vehicles, these membranes are susceptible to degradation under electrochemical stress, potentially leaching **Ammonium Fluoride**—a toxic substance—directly into the inhaled gas.





DuPont Medical Caution Statement

DO NOT USE DUPONT MATERIALS IN MEDICAL APPLICATIONS INVOLVING PERMANENT IMPLANTATION IN THE HUMAN BODY OR PERMANENT CONTACT WITH INTERNAL BODY FLUID OR TISSUES.

DO NOT USE DUPONT MATERIALS IN MEDICAL APPLICATIONS INVOLVING BRIEF OR TEMPORARY IMPLANTATION IN THE HUMAN BODY OR CONTACT WITH INTERNAL BODY FLUID OR TISSUES UNLESS THE MATERIAL HAS BEEN PROVIDED DIRECTLY FROM DUPONT UNDER A CONTRACT WHICH EXPRESSLY ACKNOWLEDGES THE CONTEMPLATED USE.

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DO NOT MAKE REFERENCE TO THE DUPONT NAME OR ANY DUPONT TRADEMARK IN ASSOCIATION WITH AN IMPLANTABLE MEDICAL DEVICE. Do not use a DuPont trademark as the descriptive name of an implantable medical device (e.g., do not call it "the Dacron® prosthesis").

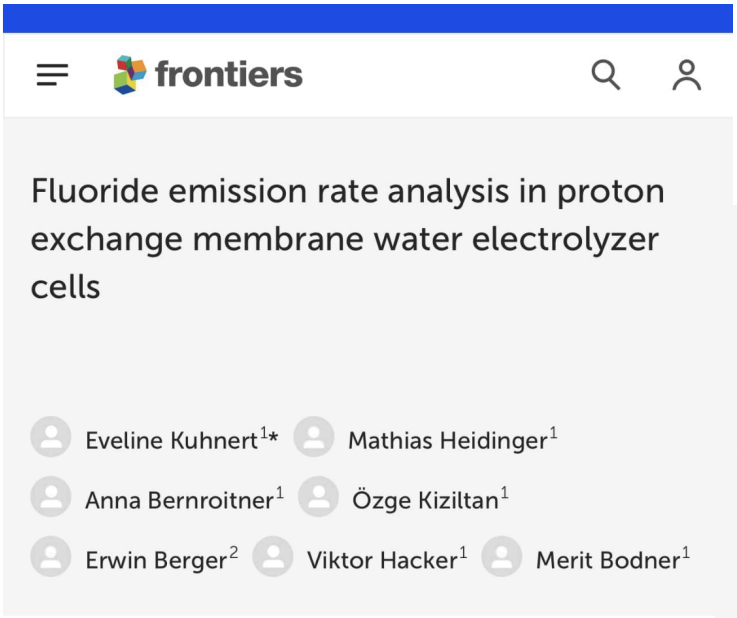
ALL IMPLANTABLE MEDICAL DEVICES CARRY A RISK OF FAILURE AND ADVERSE CONSEQUENCES. Regarding implantation of materials, you should rely upon the medical judgement of the physician, the medical device seller and the FDA or other regulatory agency. Do not rely upon DuPont. Examples of both harmful consequences and life-saving benefits from the implantation of various materials can be found in published medical articles. Without performing clinical medical studies of an implantable medical device, DuPont cannot weigh the benefits against the risks of that device and cannot offer a medical judgement on the safety or efficacy of the use of our materials in that device.

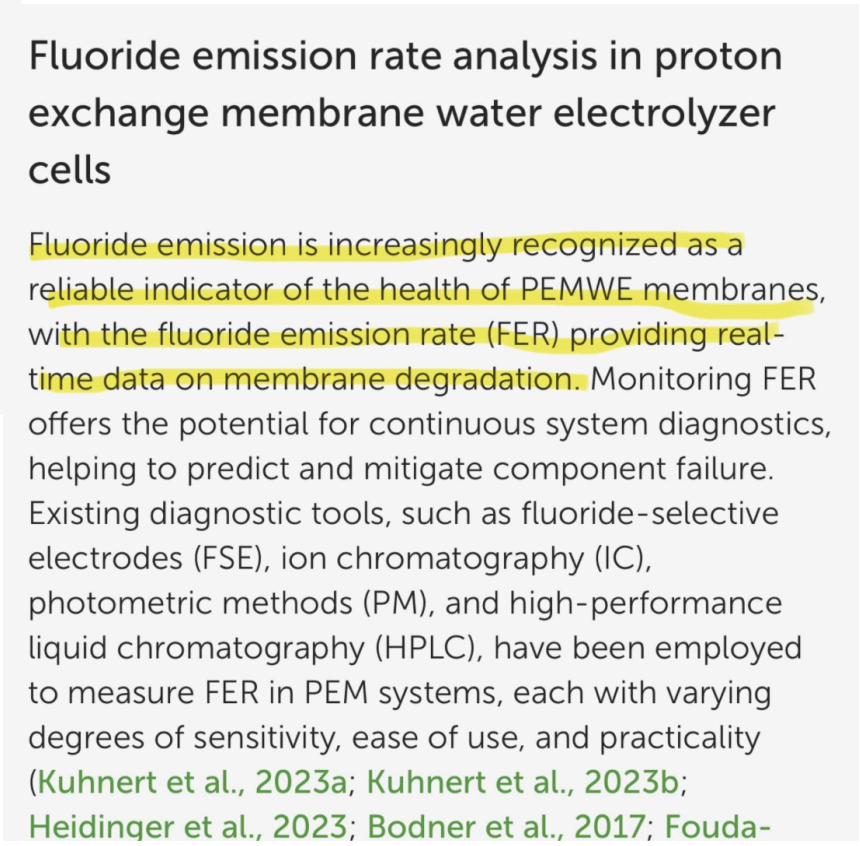
® DuPont registered trademark

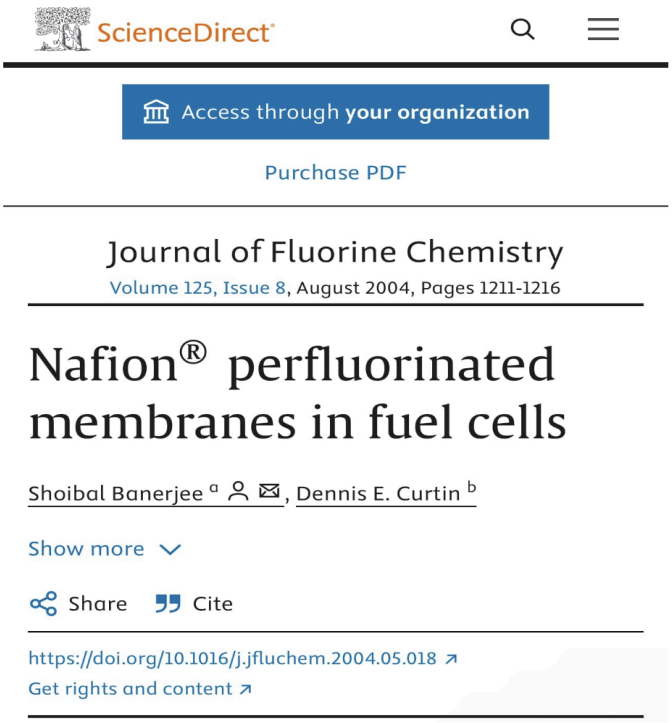
DuPont™, the manufacturer of these membranes, has issued a definitive cautionary statement regarding their use in human biology:

- **Standard Warning:** *"Do not use in medical applications involving permanent implantation in the human body"*.
- **Strict Limitation:** DuPont materials should not be used in applications involving contact with internal fluids or tissues unless provided under a specific contract acknowledging such medical use.

- **No Representation:** The manufacturer makes no warranty concerning the sustainability of these materials for contact with internal body tissues.
- **Unregulated use:** Many companies repurpose these industrial membranes for human use without toxicity screening or any sort of 3rd party or regulatory agency approval.







Research Citations Sources:

• PMID: 34065763 (Research progress of proton exchange membrane failure and mitigation strategies)

• PMID: 38869547 (Stability of graphene/Nafion composite in PEM FC electrodes)

• PMID: 26670258 (The Effect of Platinum Electrocatalyst on Membrane Degradation in Polymer Electrolyte Fuel Cells)

• PMID: 22017316 (Mechanism for degradation of Nafion in PEM fuel cells from quantum mechanics calculations)

• PMID: 32101187 (Holistic approach to chemical degradation of Nafion membranes in fuel cells: modelling and predictions)

• Nafion Perfluorinated Membranes in Fuel Cells - click HERE

• DuPont Nafion PFSA Membranes - click HERE

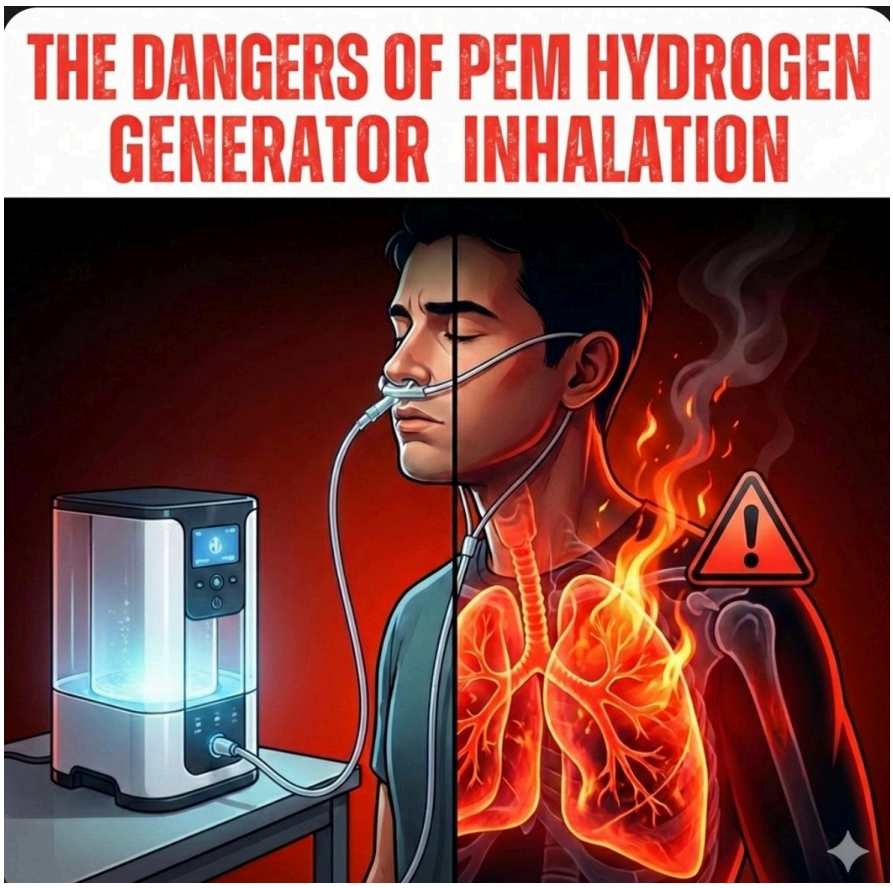
Key Health Risks:

Inhaled toxins bypass the digestive system, entering the bloodstream rapidly:

- **Fluoride Toxicity**: Long-term inhalation can lead to systemic accumulation in bones and kidneys (Chronic Fluorosis).

- **Respiratory Irritation**: F- ions can irritate lung mucosa and delicate tissues.

- **PFC Exposure**: Known endocrine disruptors that can cause liver damage and bioaccumulate in human tissue over time.



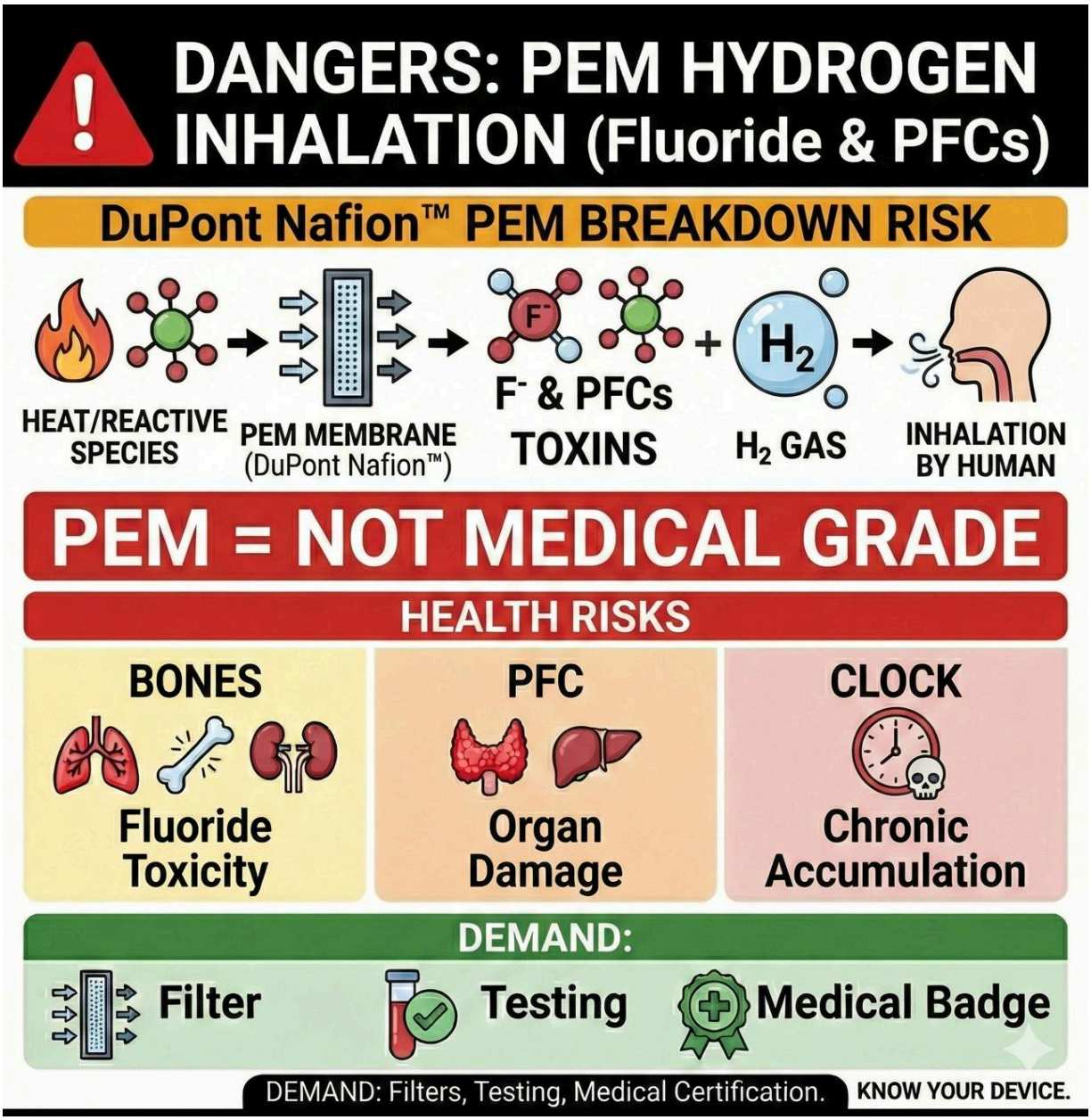
Mitigation & Transparency

Safety shouldn't be a trade-off. To ensure therapeutic safety, manufacturers must prioritize:

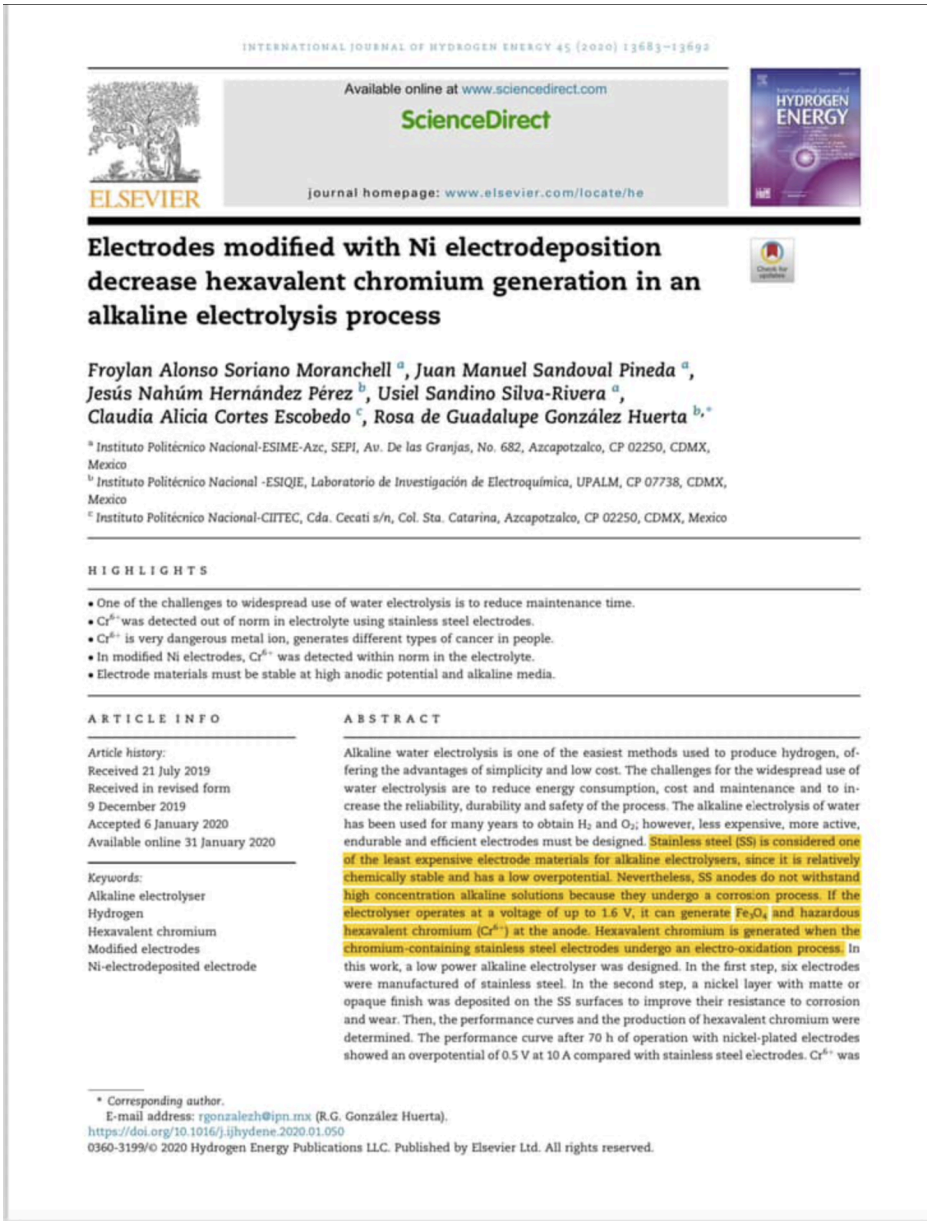
• **Toxicity Screening**: Proving units do not leach F- via third-party lab results.

• **Post-Membrane Purification**: Utilizing specialized fluoride filters downstream.

• **Medical Certification**: Using units like the Asclepius, which are regulated, medically certified and backed by hundreds of clinical publications.



➢ The Industrial Alkaline Hazard: Hexavalent Chromium



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Electrodes modified with Ni electrodeposition decrease hexavalent chromium generation in an alkaline electrolysis process

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HIGHLIGHTS

- One of the challenges to widespread use of water electrolysis is to reduce maintenance time.
- Cr^{6+} was detected out of norm in electrolyte using stainless steel electrodes.
- Cr^{6+} is very dangerous metal ion, generates different types of cancer in people.
- In modified Ni electrodes, Cr^{6+} was detected within norm in the electrolyte.
- Electrode materials must be stable at high anodic potential and alkaline media.

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ABSTRACT

Alkaline water electrolysis is one of the easiest methods used to produce hydrogen, offering the advantages of simplicity and low cost. The challenges for the widespread use of water electrolysis are to reduce energy consumption, cost and maintenance and to increase the reliability, durability and safety of the process. The alkaline electrolysis of water has been used for many years to obtain H_2 and O_2; however, less expensive, more active, endurable and efficient electrodes must be designed. Stainless steel (SS) is considered one of the least expensive electrode materials for alkaline electrolysers, since it is relatively chemically stable and has a low overpotential. Nevertheless, SS anodes do not withstand high concentration alkaline solutions because they undergo a corrosion process. If the electrolyser operates at a voltage of up to 1.6 V, it can generate Fe_3O_4 and hazardous hexavalent chromium (Cr^{6+}) at the anode. Hexavalent chromium is generated when the chromium-containing stainless steel electrodes undergo an electro-oxidation process. In this work, a low power alkaline electrolyser was designed. In the first step, six electrodes were manufactured of stainless steel. In the second step, a nickel layer with matte or opaque finish was deposited on the SS surfaces to improve their resistance to corrosion and wear. Then, the performance curves and the production of hexavalent chromium were determined. The performance curve after 70 h of operation with nickel-plated electrodes showed an overpotential of 0.5 V at 10 A compared with stainless steel electrodes. Cr^{6+} was

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Unregulated alkaline units are frequently repurposed **industrial welding machines** that use high concentrations of lye (NaOH). In these systems, standard stainless steel (SS) electrodes are common due to their low cost.

However, scientific research confirms that stainless steel anodes cannot withstand high-concentration alkaline solutions without corroding:

- **Oxidation Risk:** Operating at specific voltages can trigger electro-oxidation, generating hazardous **Hexavalent Chromium (Cr6)** and I**ron Oxides (Fe3O4).**
- **Pulmonary Danger: (Cr6)** is a dangerous metal ion and a documented human carcinogen.

"Stainless steel (SS) is considered one of the least expensive electrode materials for alkaline electrolysers, since it is relatively chemically stable and has a low overpotential. Nevertheless, SS anodes do not withstand high concentration alkaline solutions because they undergo a corrosion process. If the electrolyser operates at a voltage of up to 1.6 V, it can generate Fe3O4 and hazardous hexavalent chromium (Cr6þ) at the anode. Hexavalent chromium is generated when the chromium-containing stainless steel electrodes undergo an electro-oxidation process." - https://www.sciencedirect.com/science/article/abs/pii/S0360319920301403

➢ **The Asclepius Solution: Medical-Grade Quality**

A **Conscious Consumer** holds manufacturers accountable by demanding certification for human use, in this case the Asclepius has **Class III NMPA Medical Certification from China**, which requires compliance with hundreds of testing standards to ensure material safety. They will be receiving MDR and CE (Medical Certificate) in the EU and have also applied for FDA approval and in this sense once approved will be the only generator made for human use internationally approved around the world (Asia, Europe and North America).

The Asclepius platform eliminates leaching risks through a "Safety First" engineering approach, namely **triple filtration** where the end resultant gas quality is tested as and considered “Medical Grade”:

- **Biocompatible Catalysts:** Utilizing medical-grade catalysts that meet strict biological safety guidelines rather than industrial materials.
- **Material Compliance:** Every component in contact with the gas or liquid path is medical-grade, adhering to international standards for medical respiratory gas.
- **Impurity Isolation via Triple Filtration:** Any potential impurities generated during electrolysis are isolated and filtered via a **Triple Purification Array** to ensure the final output is particulate-free.

“Furthermore, all materials of the hydrogen inhaler used in contact with gas/liquid should be medical-grade and the hydrogen inhaler itself should be made in compliance with all international standards of medical device. Additionally, all impurity generated during the electrolysis process shall be filtered and isolated, ensuring that the outputted hydrogen-oxygen mixture or hydrogen meets the specifications of medical respiratory gas. The examples of available standards are shown in Table 1.”
Reference - https://pmc.ncbi.nlm.nih.gov/articles/PMC8092144/

- **Conscious Consumer Question:** *Consider asking the manufacturer: ”What are you doing to filter out from your generator any toxic leached materials and by-products from either PEM or Electrolyte Catalyst Based Electrolysis?”*

4. Triple-Stage Filtration/Gas Purification with Verifiable Toxicity Screening

If a device lacks robust filtration you are by default, inhaling the byproducts of its internal degradation. As a **Conscious Consumer**, it is imperative to look beyond the surface of a device and examine the rigorous validation protocols that ensure biological safety. In the realm of molecular hydrogen therapy, the most overlooked safeguard is the validation of gas purity through advanced filtration and toxicity screening. A device without sophisticated filtration is a liability, as it may deliver industrial byproducts directly into the

pulmonary system and brain. Professional standards recommend double or triple purification processes to isolate potential impurities such as fluoride or electrolyte residues.

➢ **The Asclepius Triple-Stage Purification Array**

The Asclepius platform is engineered with a proprietary **Triple Purification Array** designed to ensure the output gas is 100% particulate-free and compliant with international medical respiratory gas standards. It accomplishes this through the:

- **Primary Filtering Module:** The generated hydrogen-oxygen mixture first enters this module to remove initial electrolytic residues.
- **Liquid Blocking Module:** The gas then passes through this secondary stage, which serves both as a purification layer and an anti-explosion isolation zone.
- **Final Percolating Filter:** A third filter is installed to further percolate the gas, ensuring it meets the stringent specifications required for medical-grade inhalation

➢ **Toxicity Screens: The Scientific Proof of Purity**

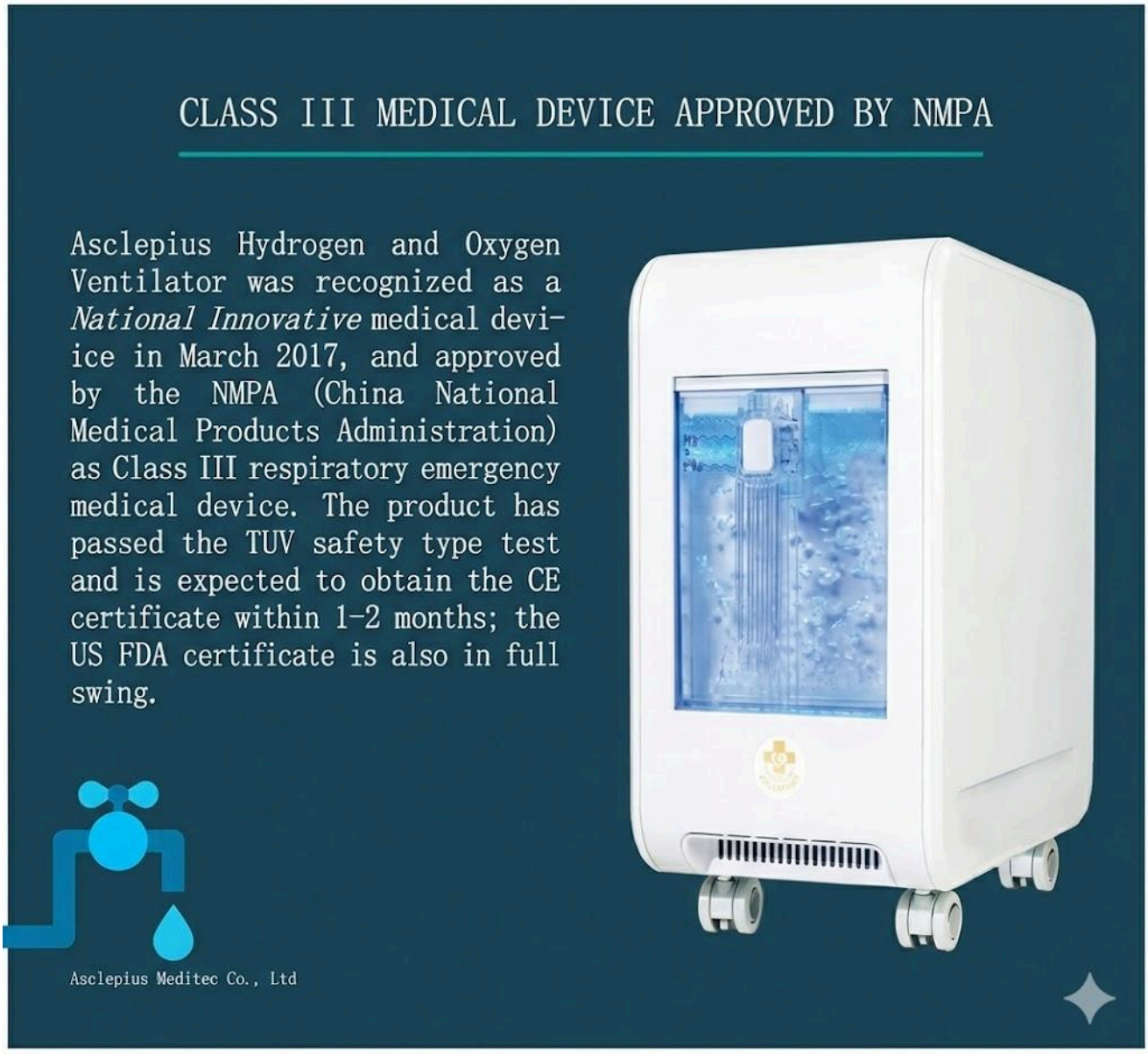
A **Conscious Consumer** demands "proofs" rather than "claims". To achieve its **Class III NMPA Medical Grade Certification**, the Asclepius AMS-H-03 was required to pass exhaustive toxicity screens for harmful chemicals and leached materials. The management standards for Class III medical devices are the strictest in the industry, requiring compliance with hundreds of testing standards to ensure safety in human applications. Achieving this certification is evidence that the device has been successfully audited for:

- **Biological Safety:** Ensuring no hazardous materials are introduced to the patient.
- **Particulate Validation:** Confirming the gas stream is free of microscopic contaminants.
- **Material Integrity:** Verifying that all parts in contact with the gas path are truly medical-grade.

➢ **The Small Molecule Challenge: Why Regulation Matters**

The necessity for Class III regulation is driven by the physics of the hydrogen molecule itself. Because hydrogen is the smallest molecule in existence, it possesses a "decomposing effect". This means it can effectively act as a carrier, transporting leached device materials—such as fluorides from PEM membranes or metal oxides from low-grade electrodes—deep into the human body.

Consequently, any manufacturer circumventing this classification is bypassing the toxicity screens essential for patient safety.



"During the operation, the electrolytic module of the AMS-H-03 hydrogen inhaler generates hydrogen-oxygen mixed gas (H2 ~66%: O2 ~34%, electrolytic solution type) which then passes through the filtering module and the liquid blocking module for purification. One additional filter is installed after the liquid blocking module to further percolate the hydrogen-oxygen mixed gas. Such triple purification (including the filtering module, the liquid blocking module, and the other filter) will assure that the outputted hydrogen-oxygen mixed gas is complied with available medical gas standards."

Reference - https://pmc.ncbi.nlm.nih.gov/articles/PMC8092144/

- **Conscious Consumer Question**: *Consider asking the manufacturer: "What are you doing to both filter any toxic leached materials and by-products from either PEM or Catalyst Based Electrolysis AND verify the quality of your gas by third party regulated agencies or labs?"*

5. Safety Engineering and Design

As a **Conscious Consumer** and a Physician Scientist, I have learned that true medical innovation is not defined by aesthetics, but by the depth of a device's **defensive safety engineering**. When evaluating a hydrogen generator, you must look for redundant safety systems that prevent mechanical failure from becoming a biological and physical hazard.

➢ **The Regulatory Benchmark: "National Innovation" Status**

A superior hallmark of a credible manufacturer is the recognition of their intellectual property by high-level regulatory authorities. The Asclepius platform holds **over 500 patents** regarding safety, design, and technical innovation and has received Innovation awards.

- **Statistical Rarity**: As of May 2021, out of nearly 200,000 domestic medical devices registered with the NMPA, only **154** have received the "National Innovation" recognition.
- **Strict Requirements**: To earn this status, a device must feature a domestically pioneering mechanism, hold independent intellectual property rights, and provide fundamental improvements in safety and performance over existing technologies.
- **Clinical Significance**: This designation confirms the technology is internationally leading and possesses significant clinical application value.

➢ **Temperature Control: Thermal Management via Cycling Module**

A critical risk in standard electrolysis is the accumulation of heat. During operation, the electrolytic process naturally generates thermal energy; without active management, this heat can degrade the system's integrity or at worst, lead to combustion reactions.

- **Temperature Stabilization**: The Asclepius is engineered with a **cycling module** specifically designed to circulate and cool the liquid within the electrolytic reservoir.
- **Leakage Prevention**: Continuously rising temperatures can shorten the lifespan of the module and compromise industrial seals, leading to dangerous gas or liquid leakage.
- **Sensor-Driven Safety**: An integrated temperature sensor monitors the module in real-time, activating the cycling cooling system whenever a thermal threshold is reached to prevent potential combustion.

"During electrolytic process, heat will be generated and eventually raises the temperature of the electrolytic module. Such continuously raised temperature could shorten the lifetime of the electrolytic module, breaks sealing of the electrolytic module and then causes the leakage of the liquid/gas therein, and likely triggers the explosion. Therefore, a cycling module to circulate and cool down the liquid in the electrolytic module is critical

to maintain the lifetime and safety, as shown in Figure 3. A temperature sensor coupled to the electrolytic module can monitor the temperature of the electrolytic module and activates the cycling module whenever necessary." Reference - https://pmc.ncbi.nlm.nih.gov/articles/PMC8092144/

- **Conscious Consumer Question:** *Consider asking the manufacturer: "How is your machine obtaining thermal regulation especially during long-term use? What features are present to help prevent over-heating and in turn thermal ignition risks?"*

➢ **Explosion Prevention/Isolation: The Liquid Blocking Module**

In a professional-grade medical device, safety must be physically "built-in." The Asclepius utilizes a patented **Liquid Blocking Module** that acts as an autonomous **anti-explosion barrier**. In the event of any sort of explosion, this feature will isolate and contain the combustion.

- **Internal Containment**: This module creates a physical "first isolation zone" between the electrolytic chamber and the user.
- **Bi-Directional Protection**: In the rare event of internal combustion, the module isolates the blast from the output path, protecting the patient from any impact.
- **External Mitigation**: Conversely, it prevents any accidental external ignition from propagating backward into the electrolytic module, safeguarding the machine's core.

"A liquid blocking module in the hydrogen inhaler is an anti-explosion device. It will isolate the electrolytic module from the output of the liquid blocking module; therefore, to block the subject user from any impact of unexpected explosion happened in the electrolytic module. On the other hand, the liquid blocking module prohibits any accidental explosion propagating from the output of the liquid blocking module into the electrolytic module, and therefore to prevent any damage to the electrolytic module caused by any ignition happening outside the liquid blocking module. Thus, a first isolation zone is formed between the electrolytic module and the liquid blocking module, and any unexpected explosion will be restrained therein (Figure 3)."
Reference - https://pmc.ncbi.nlm.nih.gov/articles/PMC8092144/

- **Conscious Consumer Question:** *Consider asking the manufacturer: "How is your device dealing with potential explosion risks? Does your machine offer any built in isolation compartments or zones to help contain and prevent internal combustions from reaching the outside world?"*

➢ **Flame Arrestors: The Mechanical Fail-Safe**

A credible medical device must account for the possibility of involuntary sparks in the environment. Flame arrestors serve as critical anti-explosion barriers designed to extinguish flames instantly and prevent them from propagating through the gas stream. In my humble opinion, flame arrestors are a non-negotiable standard for spark mitigation and explosion risk.

- **Proprietary Protection**: The Asclepius features integrated flame arrestors both within the main chassis and on the proprietary nasal cannula itself to reduce spark risk at the point of delivery.
- **Dual Isolation Zones**: These components create a "second isolation zone" between the internal nebulizer and the liquid blocking module.

"Therefore, the flame arrester is also an anti-explosion device to extinguish flame and to prevent explosion from propagating. The flame arrester could be installed at the input of the nebulizer such that a second isolation zone is formed between the nebulizer and the liquid blocking module, and any unexpected explosion in the second isolation zone will be confined therein."
Reference - https://pmc.ncbi.nlm.nih.gov/articles/PMC8092144/

- **Conscious Consumer Question:** *Consider asking the manufacturer: "What safety features does your machine offer in order to protect from, contain, reduce or avoid spark and static electricity?*

➢ **Humidity Control: Using Physics to Prevent Static**

Static electricity is a primary ignition source that many low-grade manufacturers simply ignore. Scientific principles dictate that humidity is our best defense against static buildup.

- **Electrical Resistance and Exponential Safety**: As humidity increases, the electrical resistance of the gas and the user's environment decreases, making the occurrence of static electricity nearly impossible. The time required to eliminate static electricity decreases exponentially as absolute humidity rises.
- **Integrated Nebulizer for Medicine Delivery**: The Asclepius includes an internal nebulizer that not only allows for the delivery of co-therapies and medicines but also applies the necessary moisture to the gas stream to significantly lower the risk of a static-induced explosion.
- **Moisturized Gas for Sinus Moisture**: The internal nebulizer helps apply moisture to the gas stream which helps keep sinuses from drying out with long-term gas inhalation. The nebulizing volume (amount of moisture added to the gas stream) is adjustable so that user preference can be made custom.

"Moreover, when the humidity increases, the electrical resistance of a substance (gas or the subject user) decreases and static electricity hardly occurs. The disappearing time during which static electricity is eliminated also decreases exponentially as the absolute humidity increases.61 Therefore, the higher the relative humidity, the less likely static electricity causes explosion."
Reference - https://pmc.ncbi.nlm.nih.gov/articles/PMC8092144/"

- **Conscious Consumer Question:** *Consider asking the manufacturer: "What preventative measures are you taking to help keep the nasal passages from drying out with continued long-term inhalation?"*

➢ **Hydrogen Concentration Sensors: Explosion Control**

While the Asclepius is engineered to maintain concentrations around the user at less than 1% during normal operation, a **Conscious Consumer** demands a failsafe for "abnormal" conditions, such as internal leaks.

- **The 4.7% Threshold**: Scientific consensus identifies 4.7% hydrogen volume as the critical threshold for detonation in air.
- **Active Monitoring**: High-fidelity sensors are located around the machine and within the power plug to monitor ambient gas volume constantly.
- **Automatic Shutdown**: If these sensors detect a concentration approaching the 4.7% limit—even due to a leak or poor room ventilation—the system is programmed to shut down immediately, preempting the risk of a detonation.

"It is well discussed that the H2 concentration of the mixed gas higher than 4% may cause explosion. Nevertheless, even the hydrogen inhaler outputs the hydrogen-oxygen mixed gas and the H2 concentration of which is around 66%, H2 concentration around the subject user breathing the hydrogen-oxygen mixed gas is less than 1% (as discussed later). Thus, during normal operation it is almost unlikely to incur explosion even there is unexpected flame or ignition close to the subject user. However, in the event there is any abnormal situation happened during the operation of the hydrogen inhaler, such as leakage in the hydrogen inhaler, H2 concentration around the subject user may be higher than 4% and there still exits risk of detonation. Therefore, a detector could be installed to monitor the H2 concentration and the hydrogen inhaler should be immediately shut down if the detected H2 concentration is approaching 4%."

Reference - https://pmc.ncbi.nlm.nih.gov/articles/PMC8092144/

- **Conscious Consumer Question:** *Consider asking the manufacturer: "What type of anti-explosion control have you engineered into your machine to make sure it does not output over the 4.7% hydrogen volume in air explosion threshold?"*

6. Efficiency - Recycling of the Electrolyte

As a **Conscious Consumer**, it is vital to distinguish between a device that demands constant, hazardous manual labor and one engineered with a sophisticated, self-sustaining closed-loop system. Unregulated, basic market-level, lower-quality hydrogen units typically require the user to manually handle and change the electrolyte (lye) every few weeks. This not only is a waste of user time to clean the inner reservoir and change out the electrolyte, it also presents a safety risk as it exposes the user to a caustic material while inviting contamination into the gas production path. A medically edified device prioritizes a "hands-off" approach to deal with the electrolyte in order to reduce maintenance for the user and maintain a sterile and stable environment.

- **Automated Recycling Architecture**: The Asclepius utilizes a proprietary cycling module designed to automatically circulate water and flush residual electrolyte from the air pathways back into the primary electrolytic reservoir.

- **Contamination Mitigation**: By flushing residues out of the gas path, the system prevents the accumulation of impurities that could otherwise be inhaled by the user.
- **Extended Duty Cycle**: This recycling mechanism extends the operational life of the electrolyte to approximately **5,000 hours or two years**, significantly outperforming the high-maintenance requirements of industrial-grade units.
- **Professional Maintenance Protocol**: To ensure long-term integrity, the user never touches the electrolyte; instead, the unit is serviced by professionals after 5,000 hours to inspect the main structure and refresh the system catalysts.

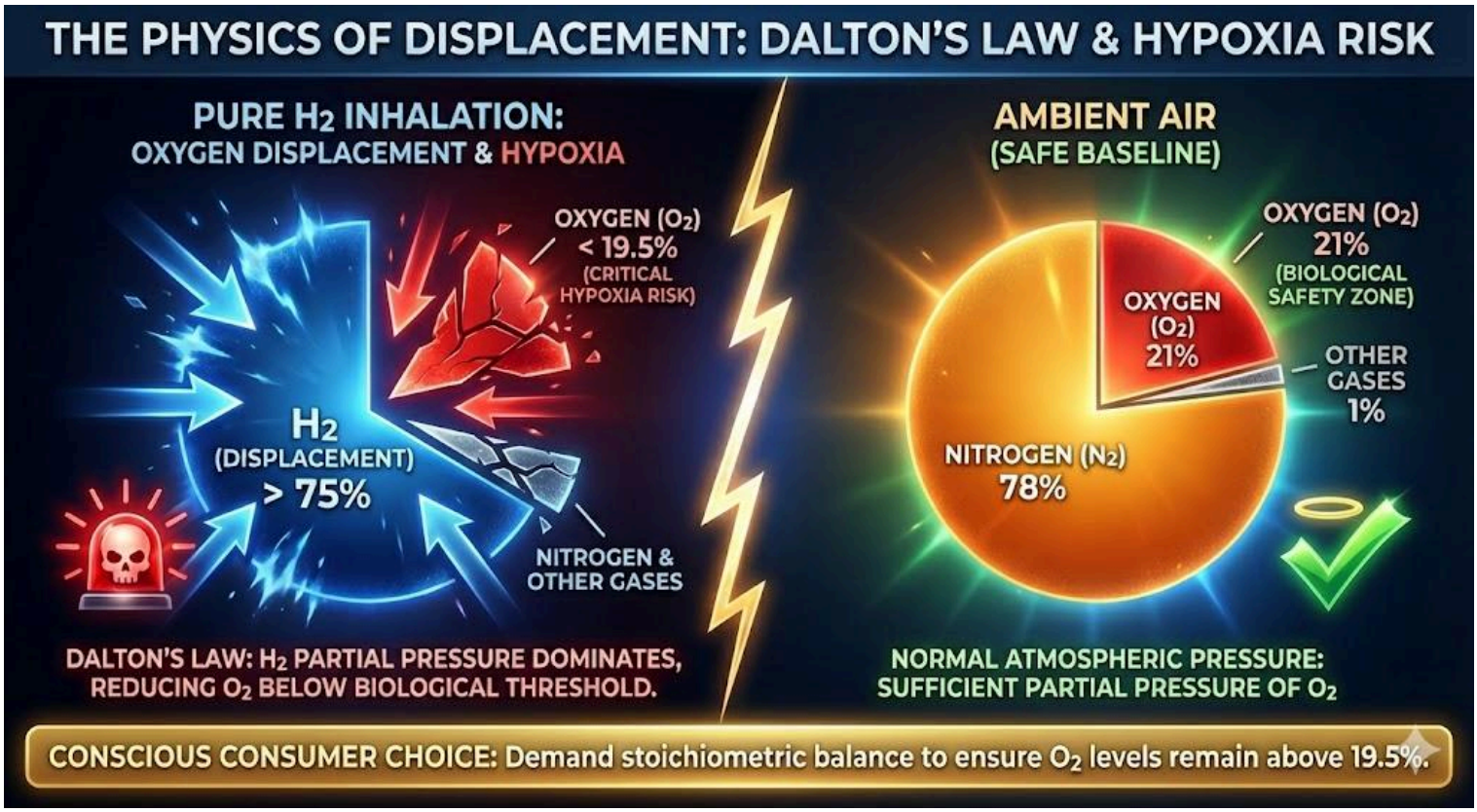
This engineering choice is not just about convenience; it is a fundamental safety barrier. Reducing the frequency of manual intervention minimizes the likelihood of mechanical leaks and maintains the precise chemical balance required for medical-grade hydrogen-oxygen production.
"Moreover, when the cycling module is utilized in the electrolytic solution type hydrogen inhaler, it could also circulate water and flush residual electrolyte in the air pathway of the hydrogen inhaler back to the electrolytic module. Flushing the residual electrolyte back to the electrolytic module could recycle the electrolyte and extend the operation hours of the hydrogen inhaler."
Reference - https://pmc.ncbi.nlm.nih.gov/articles/PMC8092144/

- **Conscious Consumer Question:** *Consider asking the manufacturer: "Does your device require me to manually handle and change caustic lye every few weeks, or is it engineered with a closed-loop recycling module that isolates the user from chemical contact for at least 5,000 hours of operation?"*

7. Hypoxia Prevention: Pure H2 vs HHO (H2/02) Inhalation
While many manufacturers promote "pure" H2 as a marketing superlative, as a **Conscious Consumer** we must scrutinize the physiological impact of long-term pure H2 gas inhalation. As a Physician Scientist navigating the landscape of medical gas therapy, I have observed this critical oversight in the marketing of "pure" H2 gas systems: the physiological risk of **oxygen displacement**. While hydrogen itself is non-toxic, its delivery method can inadvertently create a state of systemic **hypoxia**—a condition where the body is deprived of adequate oxygen at the tissue level.

➢ **The Physics of Displacement: Dalton's Law**

To understand why pure H2 presents a risk, we must look at the **Displacement Principle**. The total concentration of all gases in an inhaled mixture must always equal 100%. According to **Dalton's Law of Partial Pressures**, adding any volume of a supplemental gas (like H2) to ambient air inherently reduces the partial pressure and concentration of the other gases, specifically oxygen.



➢ **The Hypoxic Threshold and Occupational Safety**

Professional regulatory bodies, such as the **Occupational Safety and Health Administration (OSHA)**, define an "oxygen-deficient atmosphere" as any environment where oxygen concentration drops below **19.5% by volume**.

- **Safety Standard:** Clinically safe mixtures should maintain an oxygen partial pressure equivalent to at least 18% at sea level to avoid impaired judgment and fatigue.
- **The Danger Zone:** Concentrations below 16% can lead to immediate nausea and vomiting, while levels below 10% can result in unconsciousness.
- **The Math of Pure H2:** If a generator outputs 100% pure H2 at 1L/min and it is inhaled alongside 5.5L of air, the inhaled oxygen concentration is reduced to approximately **19.25%**—already crossing into the OSHA definition of an oxygen-deficient atmosphere.

➢ **The Mechanism of "Silent" Asphyxiation**

Perhaps the most alarming aspect of pure H2 inhalation is that hypoxia can occur without warning.

- **The Reflex Gap:** The human "urge to breathe" is triggered by **carbon dioxide CO2 levels**, not oxygen deficiency.
- **Silent Risk:** A user inhaling a gas that displaces oxygen may become fatigued or lose consciousness without ever feeling breathless or "short of air".
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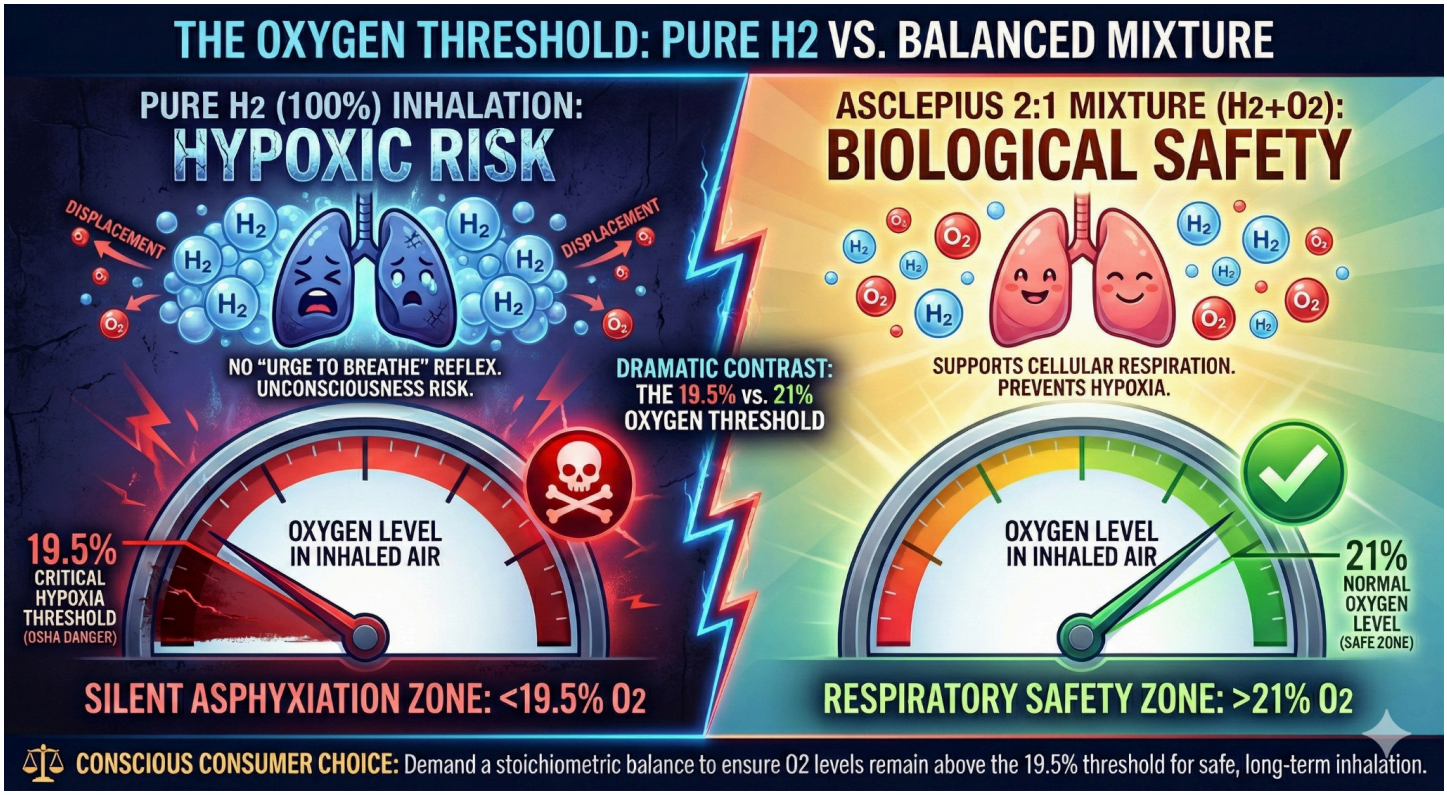


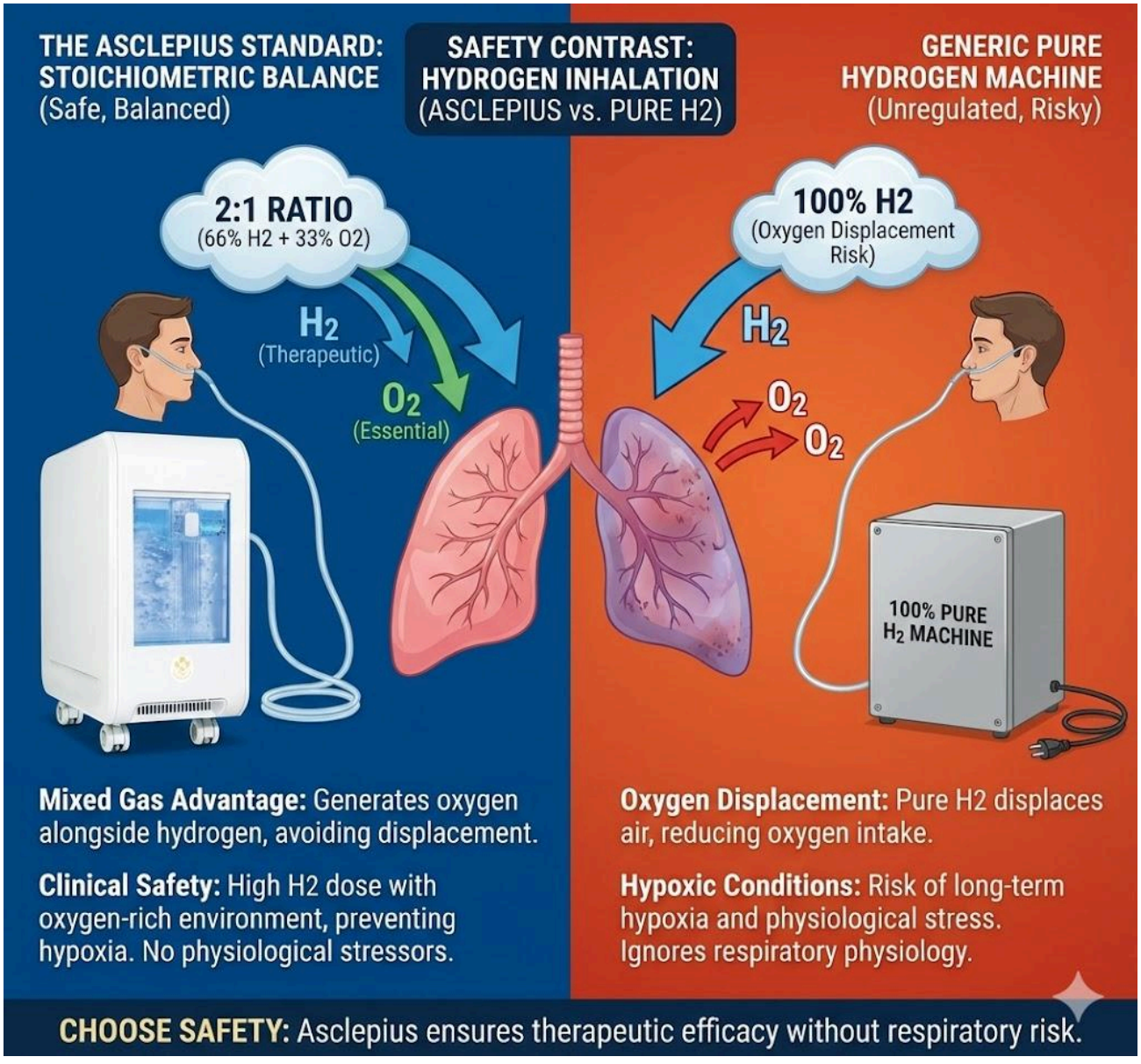
➢ **The Asclepius Standard: Stoichiometric Balance**

A **Conscious Consumer** understands that therapeutic efficacy must not come at the cost of respiratory safety and as such looks for a device that respects the body's oxygen requirements. This is why the **Asclepius Hydrogen-Oxygen Generator** utilizes a precise **stoichiometric ratio of 2:1** 66% H2 and 33% O2).

- **Stoichiometric 2:1 Ratio:** By generating oxygen alongside hydrogen in a perfect biological ratio of 2:1, the Asclepius avoids the displacement risk inherent in pure H2 machines.
- **Biological Harmony**: By providing the oxygen necessary to support the H2 delivery, this system ensures that the inhaled gas meets medical respiratory standards without compromising oxygen saturation and leading to hypoxia long-term.

- **Clinical Efficacy:** This specific mix of gases, often referred to as Brown's Gas, mixed gas or HHO, allows for the high-volume delivery of 3L/min to help more effectively saturate tissues with hydrogen while keeping the user in a safe, oxygen-rich environment.

"However, 100% hydrogen gas is not suitable for direct inhalation of human body and shall be mixed with air.[57] It is considered as oxygen-deficient gas when the O2 concentration of the inhaled gas is slower than 19.5%, and it is dangerous for human begins when the O2 concentration of the inhaled gas is slower than 16%.[58] Mixing 100% hydrogen gas from the ion exchange membrane-based hydrogen inhaler with air for inhaling will inevitably dilute the original O2 concentration (~21%) in the air and likely poses negative impact to subject users. For example, a human body consumes approximately air of 6 L/min. Supposedly the ion exchange membrane-based hydrogen inhaler outputs 100% hydrogen gas of 1 L/min and only half of them (500 mL) is inhaled and mixed with the 5.5 L of air for human body, the oxygen concentration of the mixed gas (air of 5.5 L + 100% hydrogen gas of 500 mL) is approximately reduced to 19.25%. Therefore, it is not recommended to inhale 100% hydrogen gas for a long period of time.
Reference - https://pmc.ncbi.nlm.nih.gov/articles/PMC8092144/



In a healing journey involving complex chronic illness, we cannot afford to introduce new physiological stressors. If a manufacturer is selling "purity" without accounting for oxygen displacement, they are ignoring the fundamental principles of respiratory physiology

- **Conscious Consumer Question:** *Consider asking the manufacturer: "Does your generator output 100% pure Hydrogen that dilutes my systemic oxygen levels below the 19.5% OSHA safety threshold, potentially causing 'silent' hypoxia, or does it provide a stoichiometric 2:1 ratio to ensure I am not creating a long-term hypoxic condition in my body?"*

Scientific References:

1) The basic problem: Hydrogen Displaces Oxygen → Hypoxia Risk

- Breathing pure H_2 lowers the fraction of inspired oxygen (FiO_2). OSHA and other safety bodies treat any atmosphere with **O_2 < 19.5%** as *oxygen-deficient* (a safety hazard), and O_2 < ~16% is dangerous to humans. In practice even modest reductions in FiO_2 impair tissue oxygen delivery.
- https://www.osha.gov/laws-regs/standardinterpretations/2007-04-02-0
- https://www.osha.gov/laws-regs/standardinterpretations/2024-07-16
- https://pmc.ncbi.nlm.nih.gov/articles/PMC7183576

Takeaway: Inhaling 100% hydrogen can reduce the oxygen you actually breathe → risk of mild to severe hypoxia.

2) Physiological Consequences of Even *Mild* Chronic Hypoxia

- The brain and heart are very sensitive to reduced oxygen delivery. Even moderate or prolonged reductions in oxygen saturation can cause **cognitive impairment, reduced attention and executive function, memory problems, and reduced exercise tolerance**; chronic hypoxia can lead to structural/degenerative changes in brain tissue.
- https://pubmed.ncbi.nlm.nih.gov/34618295/

Takeaway: Hypoxia may produce subtle symptoms at first (cognitive, performance) and more serious organ effects if prolonged.

3) Explosion / Flammability Risks of Pure H2 gas

- Hydrogen in air has a very wide flammability range (roughly **4% to 75% by volume** in air). That means mixtures in that band are flammable and potentially explosive if an ignition source exists. Even some 100%-H_2 devices have been implicated in accidents (leaks, ignition inside devices, etc.). Recent guidance warns about inhalers/generators that produce high-concentration H_2 because of documented explosion incidents. The higher the pure hydrogen concentration output (i.e. over 1L/min) the higher the ignition risk.

- https://pubmed.ncbi.nlm.nih.gov/36204781/

Takeaway: High-concentration H_2 systems require strict engineering safety controls; using them in consumer settings without safeguards may be hazardous. The Asclepius has patented doing 3L/min while UNDER 4.7% H2 volume by air and has engineered a default inherent safety design.

4) Clinical Practice & Safety Data

- Clinical studies of inhaled hydrogen generally use **low H_2 concentrations** or H_2/O_2 mixtures (examples: ~2-4% H_2 in air, or medically controlled H_2/O_2 blends such as 66% H_2/33% O_2 for specific indications). Safety studies in healthy volunteers have tested **low-percent H_2 mixtures** (e.g., ~2–4%) and monitored vitals and oxygenation. These low concentrations avoid flammability and oxygen-displacement problems while still showing biological effects in some studies.
- https://pmc.ncbi.nlm.nih.gov/articles/PMC8505337
- Regulatory / manufacturer guidance also recommends using inhalers that generate **mixed, oxygen-containing gas**, or devices that ensure delivered FiO_2 remains safe. Recent papers propose guidelines for selecting safe hydrogen inhalers because of past accident reports.
- https://pmc.ncbi.nlm.nih.gov/articles/PMC9555030

Takeaway: The research / clinical community generally **avoids delivering *pure* H_2 to human subjects** — they use low % H_2 or carefully engineered H_2/O_2 mixtures and monitor oxygenation

8. Conclusion: Establishing the Standard for Clinical Accountability

The global molecular hydrogen landscape remains a regulatory "Wild West". As a **Conscious Consumer** and a Physician Scientist, I find it unacceptable that industrial-grade hardware—originally designed for welding or fuel-cell applications—is routinely rebranded for human inhalation without the necessary biocompatibility or safety validations and certifications. This lack of oversight is not merely a bureaucratic gap; it is a clinical hazard that subjects users to risks of toxic leaching and potentially catastrophic mechanical failure.

➢ **A Necessary Precedent in Medical Science**

The trajectory of the Asclepius platform—pursuing **European MDR** (Medical Device Regulation) and **US FDA** certification—represents a significant milestone for the industry. This is not just a corporate milestone; it is the establishment of a clinical moat that prioritizes:

- **Biological Safety**: Moving away from repurposed industrial machines to devices built specifically for human physiology.
- **Scientific Integrity**: Shifting the market from "wellness claims" to validated clinical "proofs".
- **Accountability**: Creating a precedent where purity, stoichiometric balance, and explosion mitigation are non-negotiable standards.

The Future of Molecular Hydrogen

Our goal as conscious advocates for our own health must be to hold all manufacturers to this rigorous standard. When companies are forced to raise their benchmarks, the entire industry flourishes. This leads to:

- **Healthy Competition**: Forcing innovation in safety rather than just marketing.
- **Superior Science**: Producing data that clinicians can trust for complex chronic illness protocols.
- **Optimized Clinical Outcomes**: Ensuring that every inhalation contributes to healing without introducing new physiological stressors.

Regulation is the ultimate safeguard for the consumer. By demanding the **Asclepius Standard**, we are not just purchasing a machine; we are voting for a future where medical hydrogen is defined by safety, transparency, and scientific excellence.

Manufacturing and Global Distribution Logistics

As an International Conscious Consumer, it is essential to trace the manufacturing lineage of medical hardware back to the original manufacturer to ensure you are ordering an authentic model while holding them accountable for consistency in engineering standards across international borders.

1. Sourcing and Institutional Branding

The core engineering of the Asclepius generator was originally developed by the Japanese firm **Suisokenkou**. Asclepius Meditec subsequently "scientifically edified" the architecture—enhancing its safety protocols and clinical utility—to achieve the rigorous **Class III Medical Device** status in China.

- **Regional Branding:** Within the Chinese market, the device is distributed under the **Asclepius** insignia.
- **International Distribution:** For secondary markets outside China, the unit is frequently distributed under the **Suisokenkou** logo to navigate localized regulatory frameworks and prescription (Rx) requirements.
- **Technical Consistency:** Despite regional branding variances, the internal mechanical specifications and therapeutic outputs remain identical globally.

2. Optimized Procurement and Logistics Protocol

To lower the barrier for North American entry, we have established a professional logistics framework designed to mitigate the "hidden costs" of international medical imports:

- **Valuation Strategy:** Shipments are declared at a strategic value of **$500 USD or less** to minimize customs duties, while maintaining **full comprehensive insurance** for loss, theft, or transit damage.
- **Financial Efficiency:** We utilize **domestic American bank transfers** to eliminate the high fees associated with international wire transactions.
- **Shipping Logistics:** Average transit costs to North America range between **$500–$700 USD**, depending on the use of protective crating for the 35kg chassis.
- **Customs Fee:** Customer pays customs fees prior to delivery.

3. Required Maintenance

A medical instrument is only as reliable as its service protocol. The Asclepius is engineered for a **10–15+ year operational lifespan**, provided the system receives biennial servicing.

- **Service Interval:** Maintenance is required every **2 years or 5,000 operational hours**.
- **Professional Recalibration:** Currently, units are shipped back to the manufacturer for a comprehensive flush, electrolyte replacement, and internal seal audit.
- **Domestic Service Initiative:** We are currently in active negotiations to establish a **US-based service center** to provide domestic maintenance and reduce transit costs for North American users.
- **Warranty:** The system includes a **2-year comprehensive warranty** covering all internal service and repairs.

Consumable Parts

With ongoing use of the machine, certain materials are consumed and need to be replaced over time.

1. Air Filters

The **Primary Filtering Module** is a user-serviceable component located under the unit at its base. It is engineered to ensure the output gas remains particulate-free and compliant with medical respiratory standards.

- **Replacement Cycle**: The filter is recommended to be replaced every **6 months** under conditions of daily clinical use.
- **Pricing:** Filter is $75

2. Nasal Cannulas

The proprietary nasal cannulas are designed for durability and can be effectively sanitized for long-term reuse.

- **Sanitization Protocol**: Placing the cannula in a solution of warm water and acetic acid (vinegar) overnight to soak every few weeks is recommended for deep cleaning.
- **Advanced Hygiene**: For clinical-grade disinfection, we utilize **Hypochlorous Acid (HOCl)** spray on the nasal tips of the cannula/mask before and after each session.
- **Pricing:** 2m nasal cannula is $27

3. Distilled Water

The electrochemical process within the Asclepius requires high-purity **Distilled Water** exclusively.

- **Non-Negotiable Standard**: Tap, spring, or mineral water will cause irreversible damage to the electrolytic module and void the warranty.
- **Efficiency Correlation**: The use of double or triple-distilled water further optimizes the conductivity and longevity of the internal catalysts.
- **Operational Guidance**: The unit features an integrated voice-prompt system that monitors reservoir levels and instructs the user when replenishment is required. Typically, a few cups of water are added every 8 hours as the digital voice prompts user.

Specialized Auxiliary Accessories

To optimize the therapeutic experience and provide objective verification of gas production, the following medical-grade accessories are available:

- **Quantitative H2 Analysis Meter**: This diagnostic tool allows the user to objectively monitor the health of the machine by measuring gas output at the delivery port. This is essential for determining if a unit requires early professional maintenance.
- **Pricing:** H2 gas meter is $50

- **Ocular Inhalation Goggles**: Engineered for the treatment of ocular and vision-related pathologies, these goggles facilitate direct gas absorption through the corneal and conjunctival tissues.
    - **Pricing:** Goggles are $150

- **Conscious Consumer Question:** *Consider asking the manufacturer:*

"Is your device manufacturer providing the objective testing tools, like an H2 gas meter needed to verify your unit is outputting correctly and meeting therapeutic delivery standards, or are they leaving your clinical outcomes to guesswork?"

Frequently Asked Questions:

1) What is your warranty and return policy?

Two years of warranty or 5000 hours, whichever comes first shall prevail.

If someone wants to return the unit because they changed their mind, what is your policy for return?

Think twice before buying, we do not provide trial use, or be responsible for issues irrelevant to quality itself. The cost of the freight is costly. No return.

2) Who covers the freight?

Freight is covered by client, service fee within 2 year period is covered by us.

3) Please share information on Class III medical certification:

The AMS-H-03 Medical Hydrogen/Oxygen Generator with Nebulizer is the model (with Asclepius logo) available in China as the medical device. The BYT-EU-H03 is the same model (without Asclepius logo) sold overseas until we get FDA approval in US and Europe. At present the model has the certificates of CE, CB, PSE for humidifier for customs clearance. We expect European MDR (Medical Certificate) in 2026.

4) What is the maintenance on the machine? Do any parts need replacing or fixing or changing over time? How often does the water inside the machine need to be changed? How much lye is used and how often to replace lye, etc?

We will provide some spare parts/accessories with unit. Consumables are nasal cannulas and filter under the unit which is to be replaced every 6 months.

It is necessary to change the front jug of water out weekly and also top up the inner reservoir and/or remove water according to the voice prompts from the machine. Besides, our device is designed with self cleaning and high level disinfection.

The lye is not consumed when the device is producing the mixed gas as it is recycled so it keeps stable for a long time. But once there is leakage or other faults, the manufacturer will replace the lye, not the user himself/herself.

Maintenance requires sending the unit back for service after 2 years or 5,000 hours where it will be inspected and lye changed over.

5) What are protocols for general use of the machine?

<u>More info on different use scenarios of the device can be for your kind reference, as follows:</u>

For daily **health care,** total inhalation of hydrogen and oxygen mixed gas for about **0.5-1 hour per day** is required. Inhalation for several times will bring better effects for anti-oxidant, beauty anti-aging, and health maintenance.

For **subhealthy population**, for example, people who have a cold or three high populations (hypertension, hyperlipidemia, and hyperglycemia), total inhalation for **0.5-2 hours per day** will be beneficial.

For those who have **sleep disorders, allergic rhinitis**, **asthma** or **bronchiectasis**, total inhalation for **0.5-2 hours per day** will be beneficial, and if time permits, it can be even longer.

For improvement and rehabilitation of the people with advanced **tumors and cancers**, total inhalation for **4-8 hours per day** will be beneficial, no less than 1 hour for each time, and if time permits, it can be even longer.

6) Can you adjust the output of gas from 3L/min to less? For example, can I run the machine at 500ml/min or 600ml/min or 1.5L/min etc?
It can be adjusted to three levels of 3.0, 2.5, and 2.0L/MIN. We do not provide too low gas output and concentration at present. We believe high concentration hydrogen oxygen mixed gas is more useful and effective.

7) What safety features do you have in place so that the machine does not explode (like other Brown's Gas machines with oxygen/hydrogen mixture)?
The devices are designed with special fire blocks in different parts. These are technical issues which are more complicated for ordinary consumers. Can learn more here - https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8092144/

8) Is your machine Browns Gas (No PEM membrane) or a mixture of Oxygen and Hydrogen (PEM membrane used)?
We do not use PEM membrane, and it is mixed gas of hydrogen oxygen produced with electrolyte (Brown's Gas).

9) What is the average lifetime of the machine with daily use?
10-15 years+ depending on how well the machine in maintained. This is how long the company has been in business, so can be more.

- ➢ **FAQ on Maintenance**

1) What applicator (cannula or mask) does the device come with and how many?
Both. Two nasal cannulas, two breathing tubes plus two nasal masks.

2) When is the breathing tube used? To attach to the nasal mask or any other time?
To connect the gas output and nasal mask. Best for when one can't breathe with their nose (acute flu, etc).

3) Can the nasal cannula attach directly to the unit or is some other piece required in order to attach the cannula to the unit?
Nasal cannula directly attaches to the gas output.

4) Is there any special fitting to your nasal cannula/machine? Can I use the plain market standard ones sold here?

Our nasal cannulas are specially designed proprietary for our device and of high quality. They have spark resistant protection and fit uniquely to the device. General cannulas do not fit the lip of the device.

5) Is shipping fully covered for loss, damage etc? How long do you estimate arrival?

Yes, the package is fully covered. Turn around time for ordering is generally 2-3 weeks after receiving payment.

6) Will you be able to list the value of the parcel for less to help minimize customs fees?

We can declare it at about 500 USD. In this case, it will not be that much for the duties.

7) After 5,000 hrs of use of the machine - does the machine stop working? Do you need to send it back to you to replace lye? How does one extend the lifetime of the machine after many hours of use?

It will continue work. 5000 hours is just the guarantee period, and in fact it can be used much longer in case the device is well maintained. These days we are working to prove the device can be used much more than 5000 hours by new reliability tests and life expectation.

It is planned to send the device back to maintain the main parts of the device (excluding the accessories) free of charge during the guarantee period. We planned for maintenance for every 2500 hours, the first of which is free for the main structure. For the main structure of the device, I believe there will be no problems to continue to use, but for some accessories, they need to be maintained. But if the device is working well, it is unnecessary to send it back for maintenance.