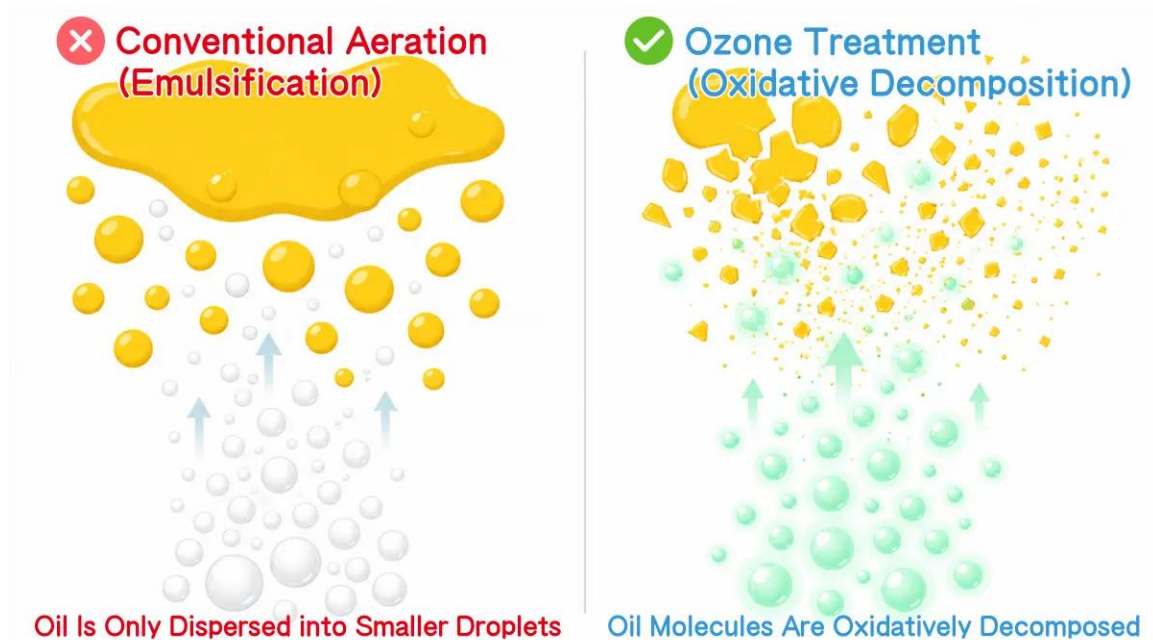


[Official Statement] The Decisive Difference Between "Aeration" and "Ozonolysis" (Chemical Decomposition) in Grease Trap Purification

We sincerely appreciate your continued patronage of AIC Corporation's environmental equipment. Recently, regarding grease trap purification systems, we have received numerous inquiries from local municipalities and facility managers asking: "Isn't ozone treatment just another form of prohibited aeration (the discharge of untreated emulsified fats)?" In this report, we officially clarify, backed by global scientific evidence, that the ozone treatment technology utilized in our "AIC Grease Ozonizer" is fundamentally different from simple aeration. It is an "irreversible chemical reaction (ozonolysis)" and a highly effective environmental preservation technology that actively prevents water pollution.

1. The Difference Between Physical Processes (Emulsification) and Chemical Reactions (Ozonolysis)

While "pumping air" (aeration) and "pumping ozone" (ozone treatment) may look similar to the naked eye, the phenomena occurring within the water are on entirely different dimensions.



✗ Aeration (Physical Process)

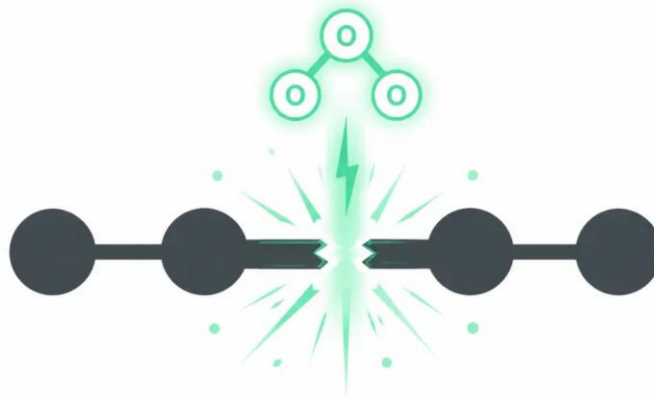
This process merely agitates and disperses water and oil into fine droplets (emulsification). **The molecular structure of the oil remains completely unchanged.** Even if it appears clean temporarily, once it flows into the municipal sewer and the water temperature drops, it will inevitably separate and solidify again, causing severe pipe blockages and secondary water pollution. What authorities prohibit and strictly regulate is the "discharge of this untreated emulsified FOG (Fats, Oils, and Grease)."

✓ Ozone Treatment (Chemical Reaction)

Through the powerful oxidizing capability of ozone, **the molecular structure of the oil (carbon double bonds) is chemically cleaved and decomposed.** Giant oil molecules are structurally transformed into completely different, highly water-soluble low-molecular-weight compounds. Because this chemical change is irreversible, the substances can never solidify again, completely eliminating the risk of pipe blockages.

2. Scientific Evidence: Cleavage of Molecular Chains via the Criegee Mechanism

The claim that "oil is transformed into a different substance" is not a mere sales pitch. It is based on an absolute chemical reaction established in international academic journals known as "Ozonolysis."



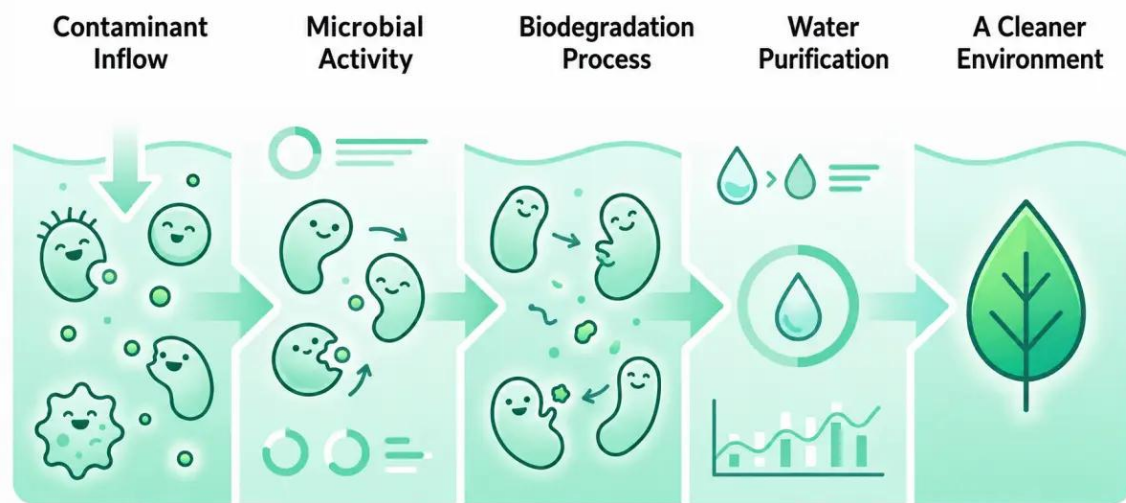
Unsaturated fatty acids, the primary components of animal and vegetable fats, contain "double bonds ($C=C$)" where carbon atoms are tightly linked. When ozone (O_3) comes into contact with these double bonds, it interrupts the bond and completely severs the molecular chain. This process, known as the "Criegee mechanism," structurally modifies massive, sticky oil molecules into fine, water-soluble molecules such as aldehydes and carboxylic acids.

In conclusion, ozone treatment is not "discharging oil as it is into the sewer," but rather an advanced purification process that "chemically decomposes oil into harmless water-soluble substances before discharge."

3. Analytical Chemical Proof and Contribution to "Water Quality Improvement"

The disappearance of oil content in water through ozone treatment has been proven by global research using state-of-the-art precision analytical instruments like GC-MS (Gas Chromatography-Mass Spectrometry). Scientific data confirms that the peaks of the original long-chain fatty acids (oil) disappear, while short-chain organic acids (water-soluble) are generated.

Why Does Ozone Treatment Contribute to "Water Conservation"? (Enhancement of Biodegradability)



In sewage treatment plants, wastewater is purified through the action of microorganisms. However, giant, untreated oil molecules are recalcitrant (too large to digest) for these microorganisms, placing a massive burden on the treatment facility and causing water pollution.

Conversely, the organic acids finely cleaved by ozone become highly accessible and easily digestible food for natural microorganisms (high biodegradability). In other words, applying ozone treatment inside a grease trap directly assists the microorganisms in sewage treatment plants, making it an exceptionally superior environmental measure that accelerates the purification of rivers and oceans.

Because ozone itself quickly reverts to harmless oxygen (O_2) after the reaction, there is zero risk of secondary pollution or residual toxicity associated with chemicals.

4. Comparison: Conventional Aeration vs. Ozone Treatment

We have summarized the differences in technical mechanisms and their resulting impacts on water quality in a clear table below.

Criteria	Conventional Aeration (Air Sparging Only)	Ozone Treatment (Ozonolysis Reaction)
Treatment Mechanism	Mere agitation & dispersion (Emulsification only)	Cleavage & Solubilization of oil molecules (Irreversible oxidative decomposition)
State of Oil After Discharge	Separates and solidifies again as water temperature drops	Properties are altered; will never solidify again
Risk of Pipe Blockages	Significantly increases (Secondary hazard)	Drastically eliminated
Impact on Water Quality	Untreated oil escapes, causing severe environmental load	Enhances biodegradability, aiding sewage treatment & conservation

5. Official and Academic Evidence Supporting This Statement

- **Chemical Basis: Criegee Mechanism**
An academic paper (published in *Angewandte Chemie*) by R. Criegee himself, explaining the reaction mechanism by which ozone irreversibly cleaves the carbon double bonds of fats and oils.
[Reference: R. Criegee, 'Mechanism of Ozonolysis' →](#)
- **Analytical Proof (GC-MS)**
A paper in an international ozone journal proving via GC-MS that fatty acids (oil content) in water disappear through ozone treatment, chemically transforming into short-chain organic acids.
[Reference: Academic Paper 'Aqueous Ozonation Of Fatty Acids' →](#)
- **Public Infrastructure Implementation**
The advanced water treatment technology of the Tokyo Metropolitan Waterworks Bureau. The technology of using ozone to reduce the molecular weight of organic matter in water, making it easier for microorganisms to decompose, is a standard adoption in water purification plants nationwide.
[Reference: Tokyo Waterworks 'Advanced Water Treatment' →](#)

Frequently Asked Questions Regarding Ozone Treatment, Compliance, and Water Purification

Q. Our local municipality prohibits "oil discharge via aeration" and "trap modifications". Can we still install it?

A. The primary purpose of municipal regulations is to prevent the "discharge of untreated emulsified oil" and the "reduction of structural integrity caused by drilling holes in the trap." Our ozone treatment technology chemically decomposes (solubilizes) oil content to clearly purify water quality, and it supports "non-destructive installation" without drilling holes in the grease trap body. While the design aligns with the intent of laws and ordinances regarding both water conservation and structural maintenance, we always require prior consultation and confirmation with the governing local authority (e.g., sewage bureau) regarding final approval for installation.

Q. Will the oil decomposed by ozone solidify again further down the sewer pipes?

A. It will never solidify again. Ozone powerfully severs the carbon double bonds of the unsaturated fatty acids in animal and vegetable fats, chemically transforming them into low-molecular-weight substances that easily mix with water. Once decomposed, it loses the original properties of oil. Because this is an irreversible reaction, there is no risk of it re-solidifying and clogging the pipes even when the water temperature drops.

Q. Won't discharging ozone-treated wastewater cause water pollution in rivers and oceans?

A. It does not cause water pollution; rather, it significantly contributes to environmental conservation. Oil that has been broken down into low-molecular-weight compounds by ozone changes into a state that is highly "digestible" (highly biodegradable) for the microorganisms in sewage treatment plants. Additionally, since ozone itself quickly reverts to harmless oxygen (O₂) after the reaction, there is absolutely no concern about residual toxicity or secondary pollution like there is with chemical agents.

Q. If we install an ozone system, will grease trap pumping (vacuum cleaning) become completely unnecessary?

A. While the decomposition of floating FOG (lard) and foul odors is dramatically resolved, the "sediment" that accumulates at the bottom (solid waste such as food scraps and vegetable peelings) cannot be decomposed by ozone. Therefore, periodic pumping and cleaning of the sediment are still required. However, because the sticky grease and severe odors are eliminated, the daily labor required for cleaning and the frequency (and cost) of outsourcing to professional contractors can be overwhelmingly reduced.

Official Statement from AIC (Conclusion)

The ozone treatment technology provided by AIC Corporation through the "AIC Grease Ozonizer" is a highly advanced "chemical decomposition and water purification process" that stands in stark contrast to the "physical aeration (emulsification)" prohibited by municipalities. We strictly refuse to sell products lacking scientific evidence. We declare with absolute confidence and responsibility that this technology not only eliminates foul odors and cleaning burdens in food service and kitchen facilities but also significantly contributes to a sustainable society (SDGs) and global water conservation.