

# Environmental Odor-VOC (Volatile Organic Compound)

## Neutralizing Machine

**nioi no reset**  
**air wide range**  
nioi no reset air cartridge + HEPA filter

**nioi no reset**  
**air portable**



awr-16



ap-14

# Background of Development



Nanomineral particles developed as antiterrorism measures in US was applied to the air filter for VOC/odor. You may imagine that the harmful substances are used as it is for antiterrorism measures. However the main ingredients are natural minerals so that it is as safe as the salt

(Acute oral toxicity: L D 5 0 is above 2 g /Kg    Acute dermal toxicity: L D 5 0 is above 5 g / k g)

## Reset Odor Air is

**NOT just an air purifier or a deodorizer !**



Can eliminate VOC (Volatile Organic Compound) !



Has vast surface area due to the nanoparticulated natural minerals !



Safe as the salt ! Sophisticated deodorant mechanism !



Amazing deodorant speed !

**VOC/Smelly environment improvement Filter**  
is the most unique characteristics of the product

nioi no reset

# air cartridge

臭いのリセット エアークャトリッジ

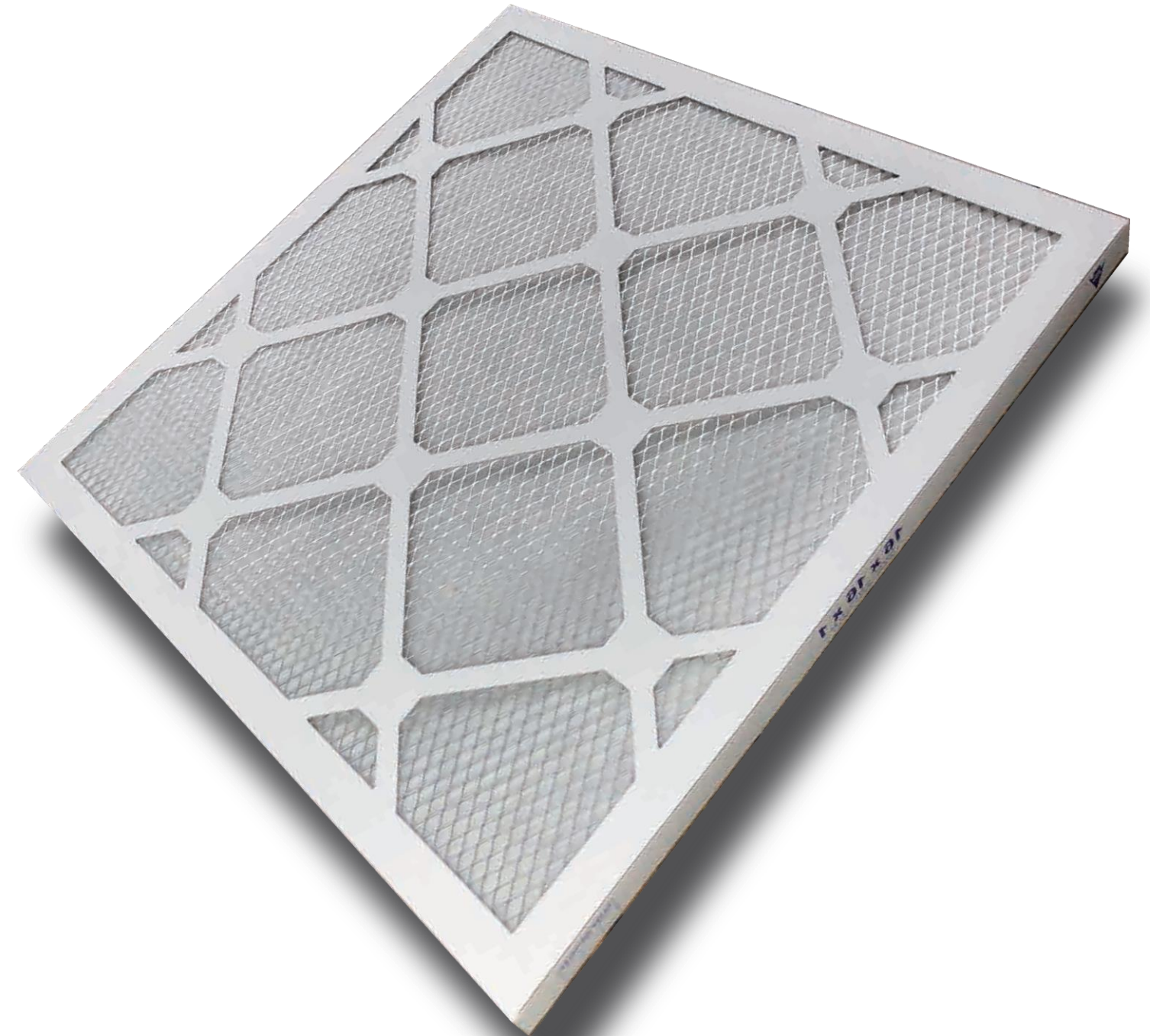
●Standard size

▪ 16 inch : 395mm×395mm×20mm

(for wide range)

▪ 14 inch : 350mm×350mm×20mm

(For portable)





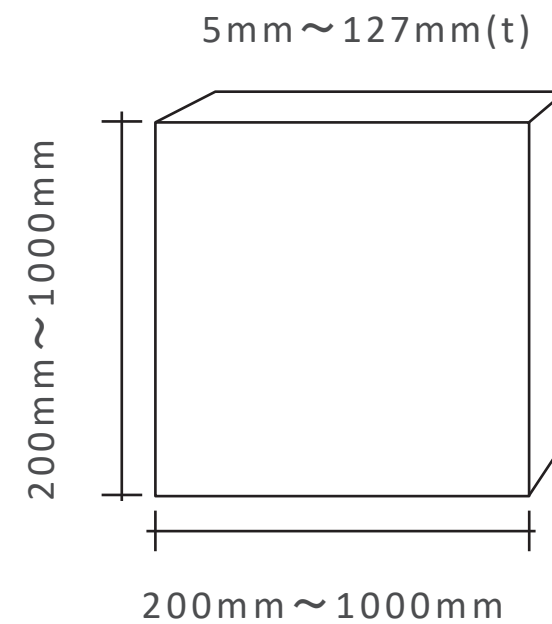
## ■ Customizable Cartridge Size

The cartridge size can be customized in accordance with the customer's circumstances except the ready-made one.

The cartridge can be supplied without the unit

\* Lead time is different from the machine

(MOQ : 10 )



● Frame type  
t=15mm ~ 127mm



● Flexible type t=5mm ~ 15mm

## ■ Application



- Improve the environment for factories, housings, construction fields, smoking areas and places with offensive odor.

【Factories】 Tire, Semiconductor, Casting, Pulp, Painting, Printing, Resin, Texture, Heavy or agricultural chemicals, Foods and so on

【Others】 Housing or construction fields before taking over, Hotel rooms, Smoking areas, Sewage processing fields and so on.

# ■Cubic feet per Minutes (CFM)

250 ~ 500CFM equals 425 ~ 935 m<sup>3</sup>/hr

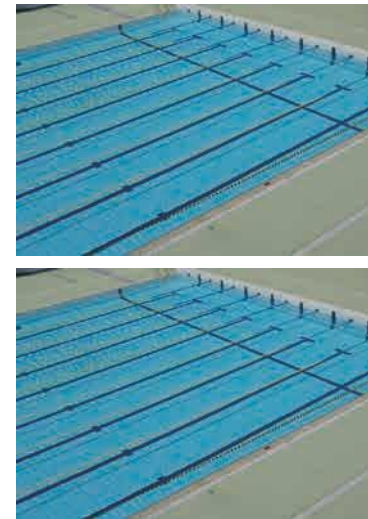
【Reference】 Japanese school swimming pool is generally approx. 360 m<sup>3</sup> (W:12m x L:25m x T:1.2m)

Wide Range



awr-16

250 ~ 500CFM  
(425 ~ 935 m<sup>3</sup>/hr)



Approx. 2 x 25m swimming pool  
volume circulation

Portable



ap-14

250CFM  
(425 m<sup>3</sup>/hr)



Approx. 1 x 25m swimming pool  
volume circulation

※The above CFM is for the machine performance

※Actual CFM or capturing value will be changed in accordance with the substances (volume /concentration) or circumstances.

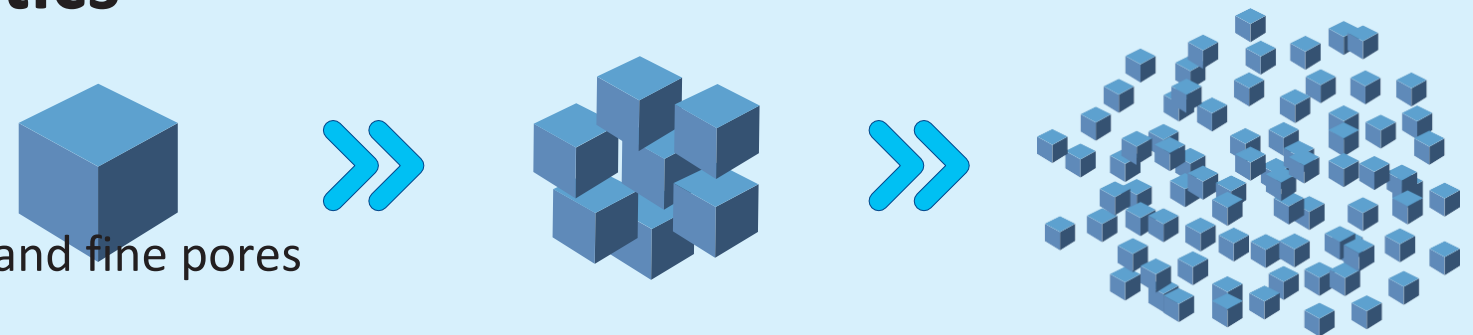
# Feature 1 Natural Minerals · Unique Nano technology Characteristics

■ Natural mineral characteristics → Various organic substances decomposition

## Unique Nano Technology

### ■ Unique Nano Technology Characteristics

● Nanoparticulation of natural minerals increases surface area and fine pores



Increased Surface Area

23g of sum of surface areas of Nanoparticulated natural minerals equals one of football field



5 x JPY10 coins  
= approx. 23g

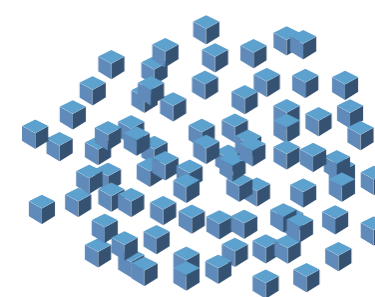
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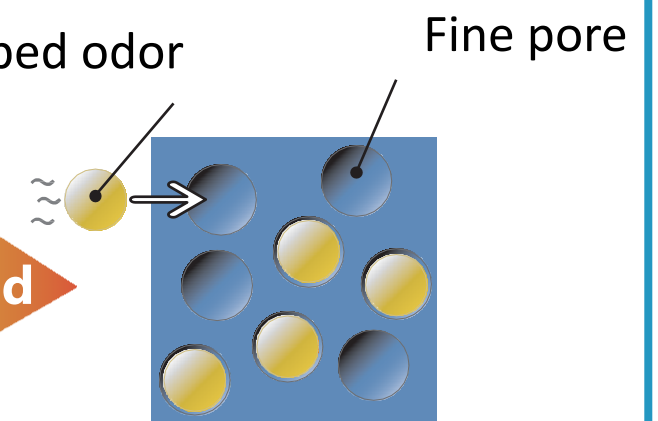
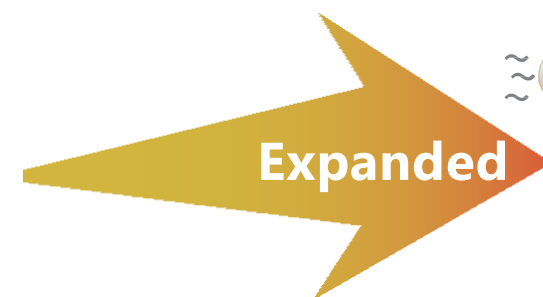
Football Field  
5000 – 6000m<sup>2</sup>

Numerous Fine Pores

The nanoparticle is porous so that fine pores increase absorbability



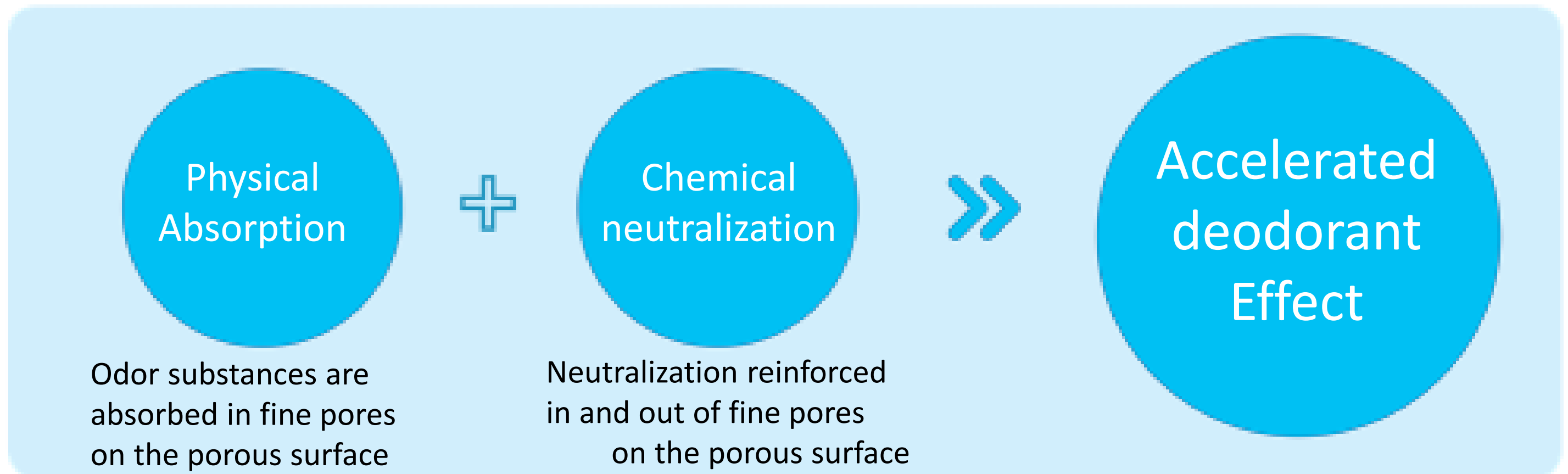
Nanoparticle



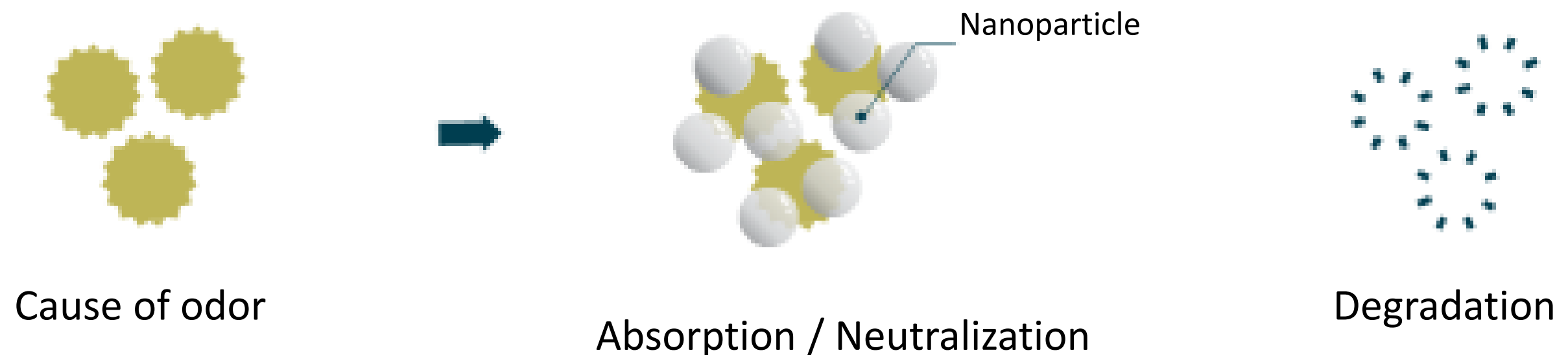
Porous surface



## Feature 2 Sophisticated deodorant mechanism

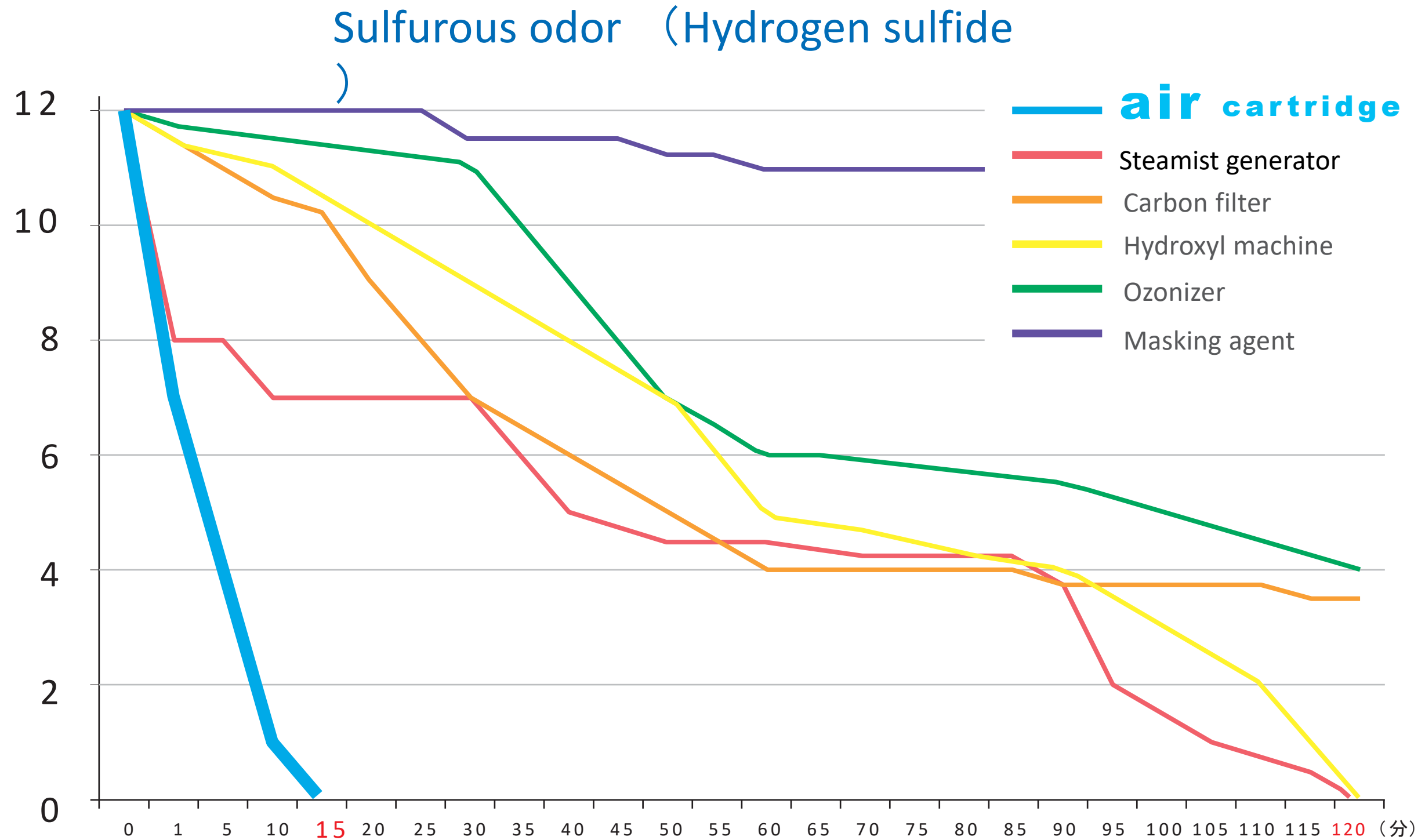


### ■ Degrade/dismantle the causative substances instead of masking them





# Odor eliminating time (Comparison with other methods)



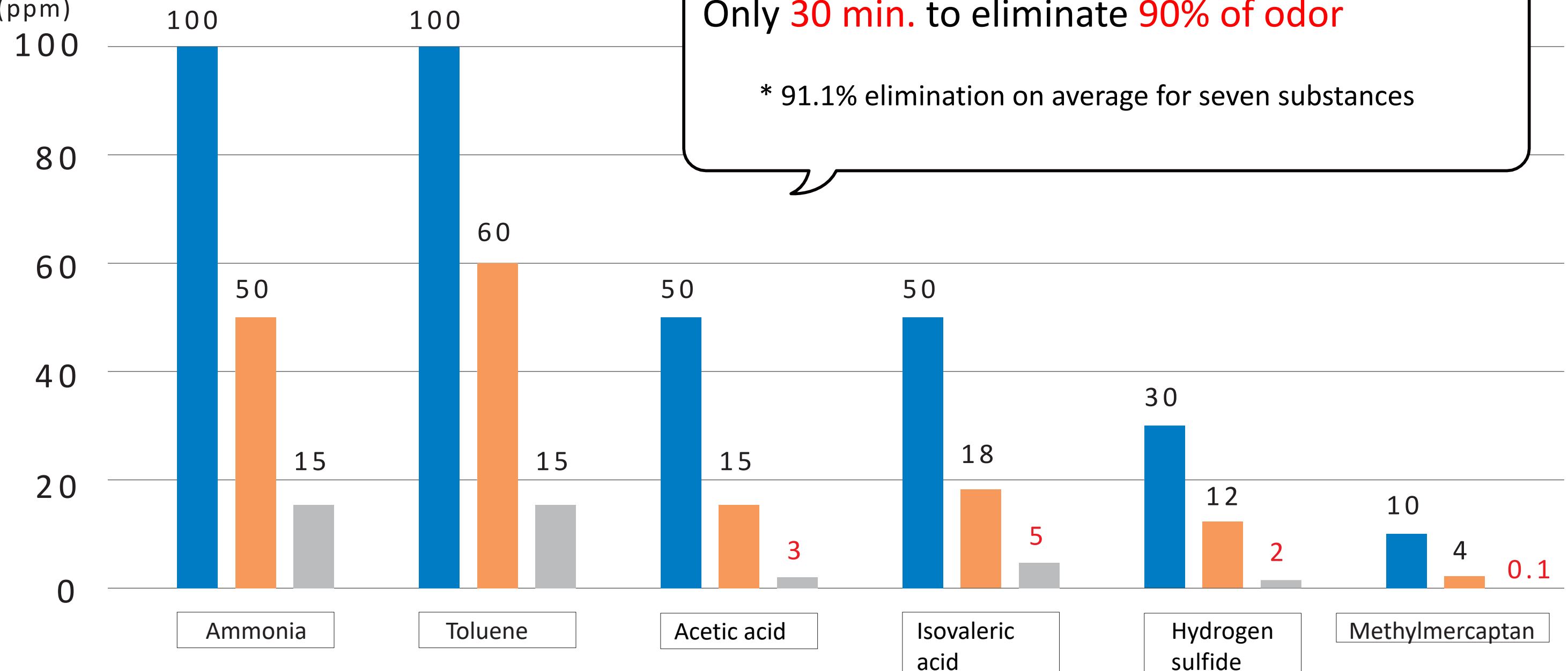
Furthermore, the result of the checking other substances is ...

# Odor elimination by time

Tested by Public Testing institution

Original 5 min. 30 min.

Concentration (ppm)



Only 30 min. to eliminate 90% of odor  
 \* 91.1% elimination on average for seven substances

Elimination rate after 5 min.

50.0% 40.0% 70.0% 64.0% 60.0% 60.0%

Elimination rate after 30 min.

85.0% 85.0% 94.0% 90.0% 93.4% 99.0%

## ■ Material Comparison

- 【Activated carbon】 Unstable absorption due to the substance condensability or solubility
- It may smell again later due to the circumstances or humidity as it has no chemical neutralization

【Ozone】 Causal substance of air pollutant, oxidant

- It is known as harmful substances for health and vegetation

\* EPA restricts the ozone environmental criteria strictly.

### Ozone's effect on Human Health

| Ozone (ppm) | Symptoms  |
|-------------|---|
| ~ 0.1       | Nose or throat irritation                                       |
| 0.2 - 0.5   | Deterioration of vision   |
| 0.4 - 0.5   | Upper respiratory irritation                                    |
| 0.6 - 0.8   | Chest pain / coughing   |
| 1 - 2       | Fatigue, headache, top-heavy feeling, breathing function change |
| 5 - 10      | Breathing problem / heart rate increase                         |
| Above 50    | Mortal danger   |

### Ozone indoor environmental standards

| USA             | JAPAN                            |
|-----------------|----------------------------------|
| FDA             | Industrial Safety and Health Act |
| 0.05ppm (24hrs) | 0.1ppm                           |

\* Human being feels ozone odor around 0.01 - 0.02ppm



# ■ Harmful chemical substances and VOC (Volatile Organic Compound) to be expected to make an effect

\* Please let us know the other substances except the ones listed.

| Organic compounds          |  | Corrosive / Acidic gas | Asid                           | Phosphorus / Sulfur compounds |
|----------------------------|--|------------------------|--------------------------------|-------------------------------|
| Ethylene oxide             | 4-Vinylpyridine                          | Nitrogen dioxide       | Hydrochloric acid              | 2- Chloroethyl ethyl sulfide  |
| Acetaldehyde               | Formaldehyde (formalin)                  | Anhydrous ammonia      | Hydrofluoric acid              | Dimethyl methyl phosphonate   |
| Toluene                    | Cleaning chemicals                       | Chlorine               | Nitric acid                    | Palaoxon                      |
| P-cresol                   | Perfumed product                         | Hydrogen chloride      | Phosphoric acid                | Parathion                     |
| Diesel exhaust odor        | Methyl acrylate                          | Sulfur dioxide         | Sulfuric acid                  | Methyl mercaptan              |
| Denatured ethanol          | Cresol (hospital-specific chemical odor) | Hydrogen sulfide       | Isovaleric acid                | Other pesticides              |
| Acetone                    | Methyl disulfide (excretion odor)        | Carbon monoxide        | Acetic acid                    |                               |
| Methanol                   | Indole (excretion odor)                  | Carbon dioxide         | Normal butyric acid (pet odor) |                               |
| Hydrogen peroxide Adhesive | Skatole (excretion odor)                 |                        |                                |                               |
| Solvent                    | Others                                   |                        |                                |                               |
| Acetonitrile               | Body odor                                |                        |                                |                               |
| Chloroacetyl chloride      | Perfume / fragrance                      |                        |                                |                               |
| Acetyl chloride            | Catavelin (dead odor)                    |                        |                                |                               |
|                            | Putrescine (dead odor)                   |                        |                                |                               |

Thank you for your attention !