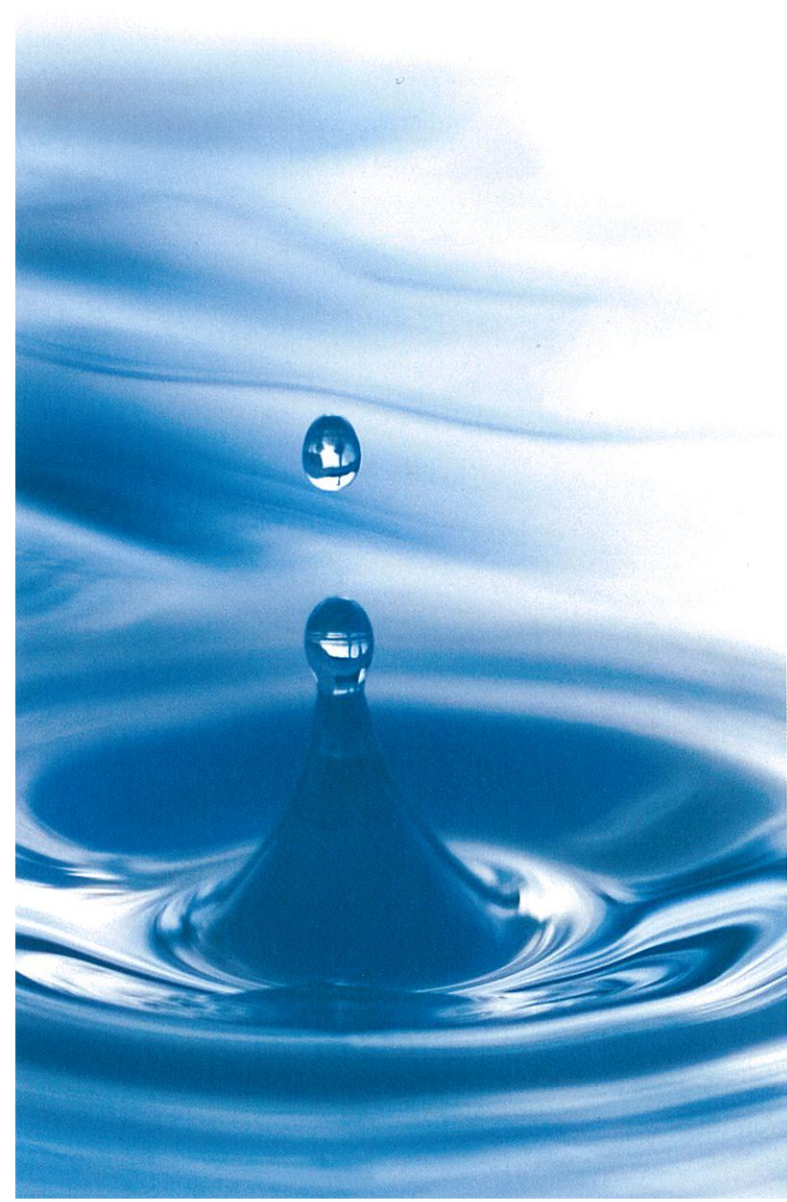
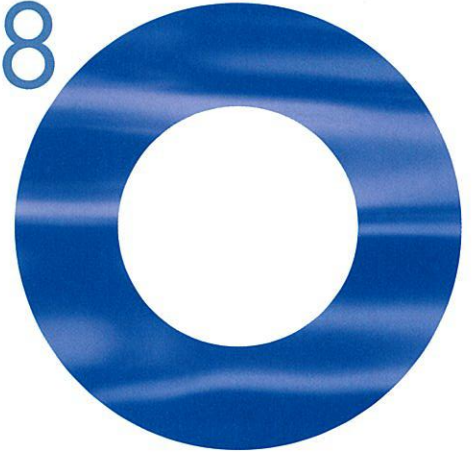




TAIYO NIPPON SAN SO
The Gas Professionals

Water

18



Taiyo Nippon Sanso's Solution as a Leading Oxygen Manufacturer

Ultra-Pure Oxygen Distillation
- A Revolutionary New Process

Water

18



**Target Material
for ^{18}F PET Imaging Products**

Superior Quality

• Highest Enrichment 98atom%

• cGMP Production ICHQ7A

Stable Supply

• Annual Capacity 300kg 600kg in 2015

• Dedicated manufacturing Plants



US.PAT.NO. 6,461,583

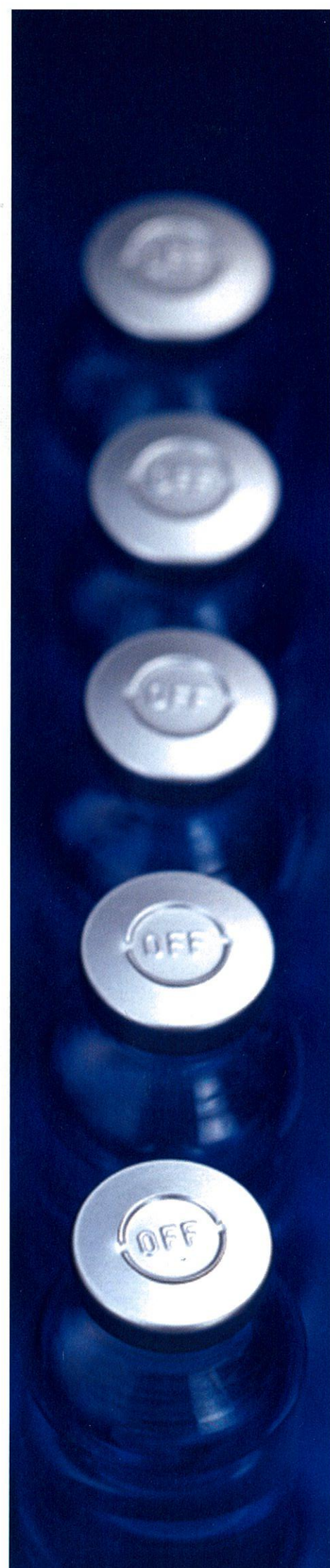
Method for enrichment of heavy component of oxygen isotopes

US.PAT.NO. 6,321,565

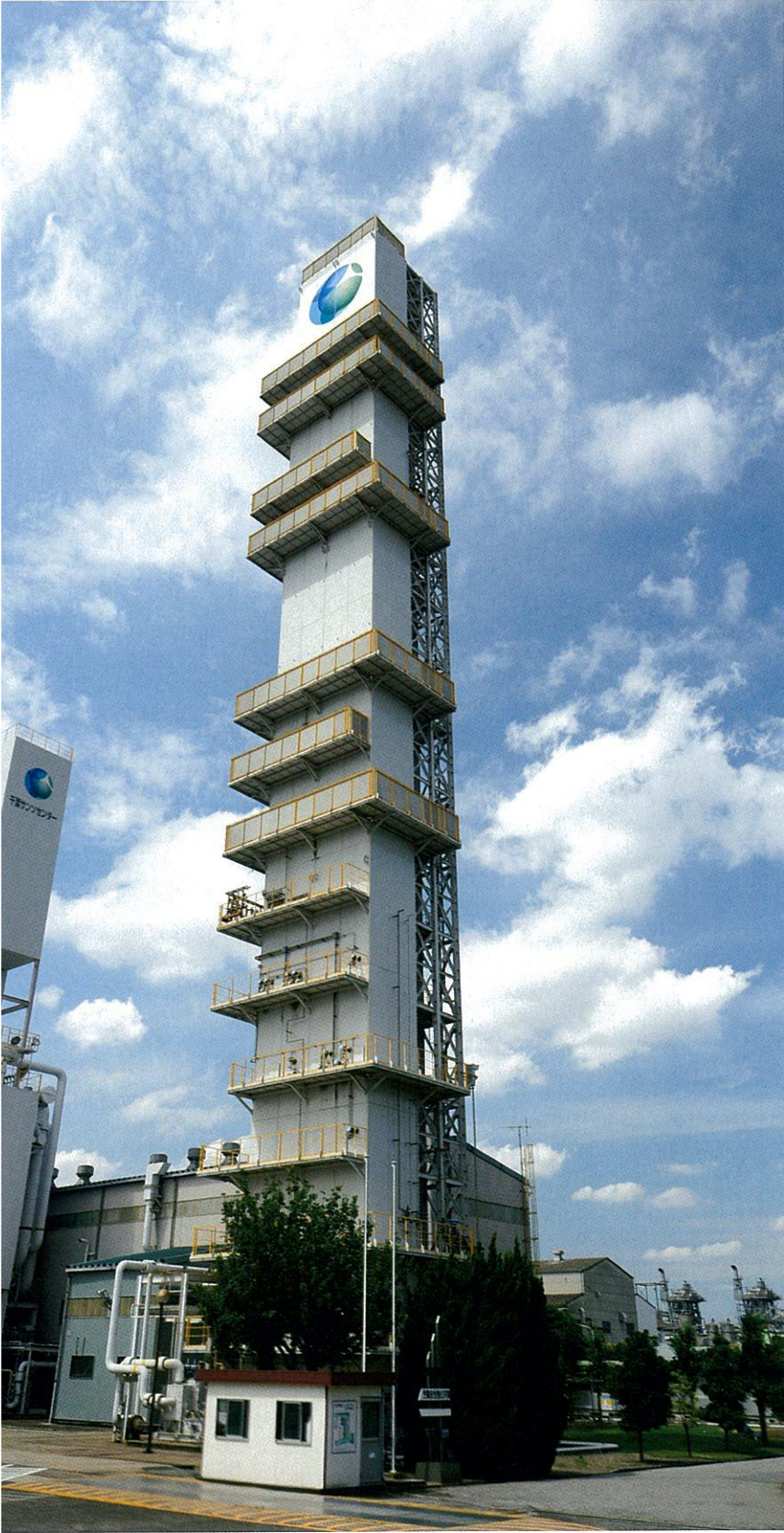
Method and apparatus for the production of heavy oxygen water

US.PAT.NO. 6,202,440

Process and apparatus for separation of stable isotope compound

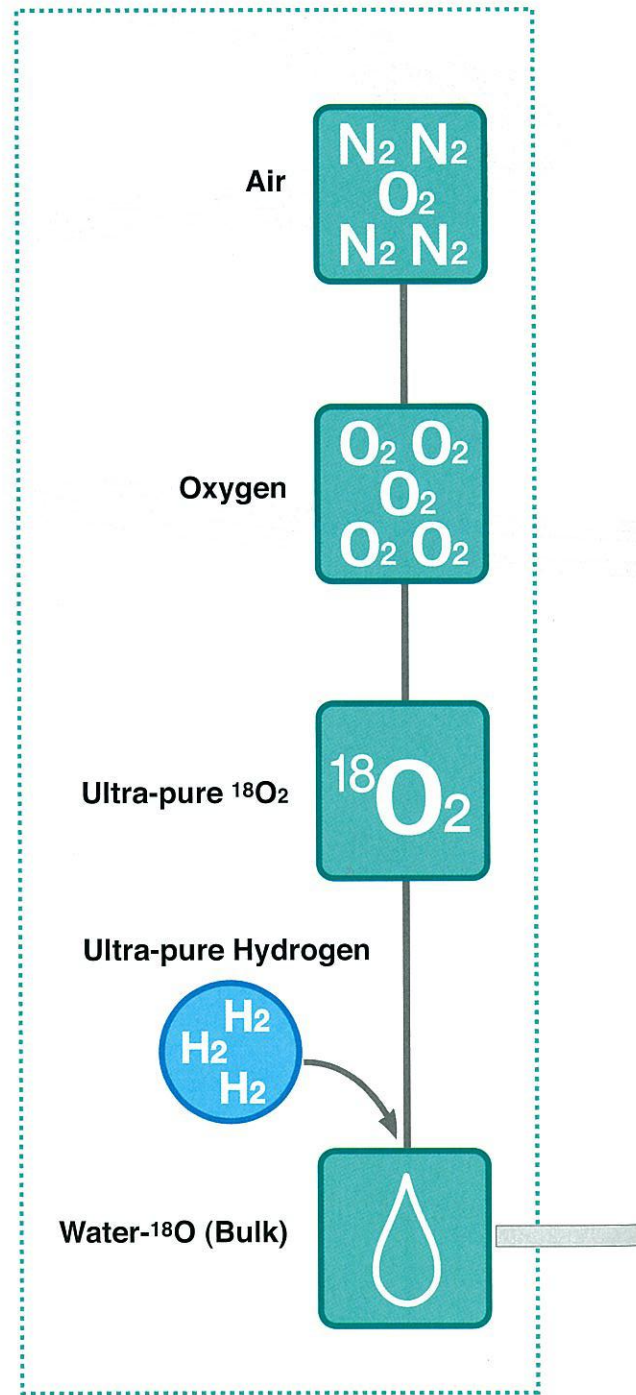


World's Largest Production Capacity with Two Independent Facilities -Total 300kg



Enriching

ISO9001



100kg/y No.1 Plant, Goi Factory

Packaging

cGMP (ICHQ7A)

Clean room



Dispensing

in class 100
clean room



Sterilization

bottles, caps and
machines



Sterilization

by autoclave
(121°C, 20minutes)

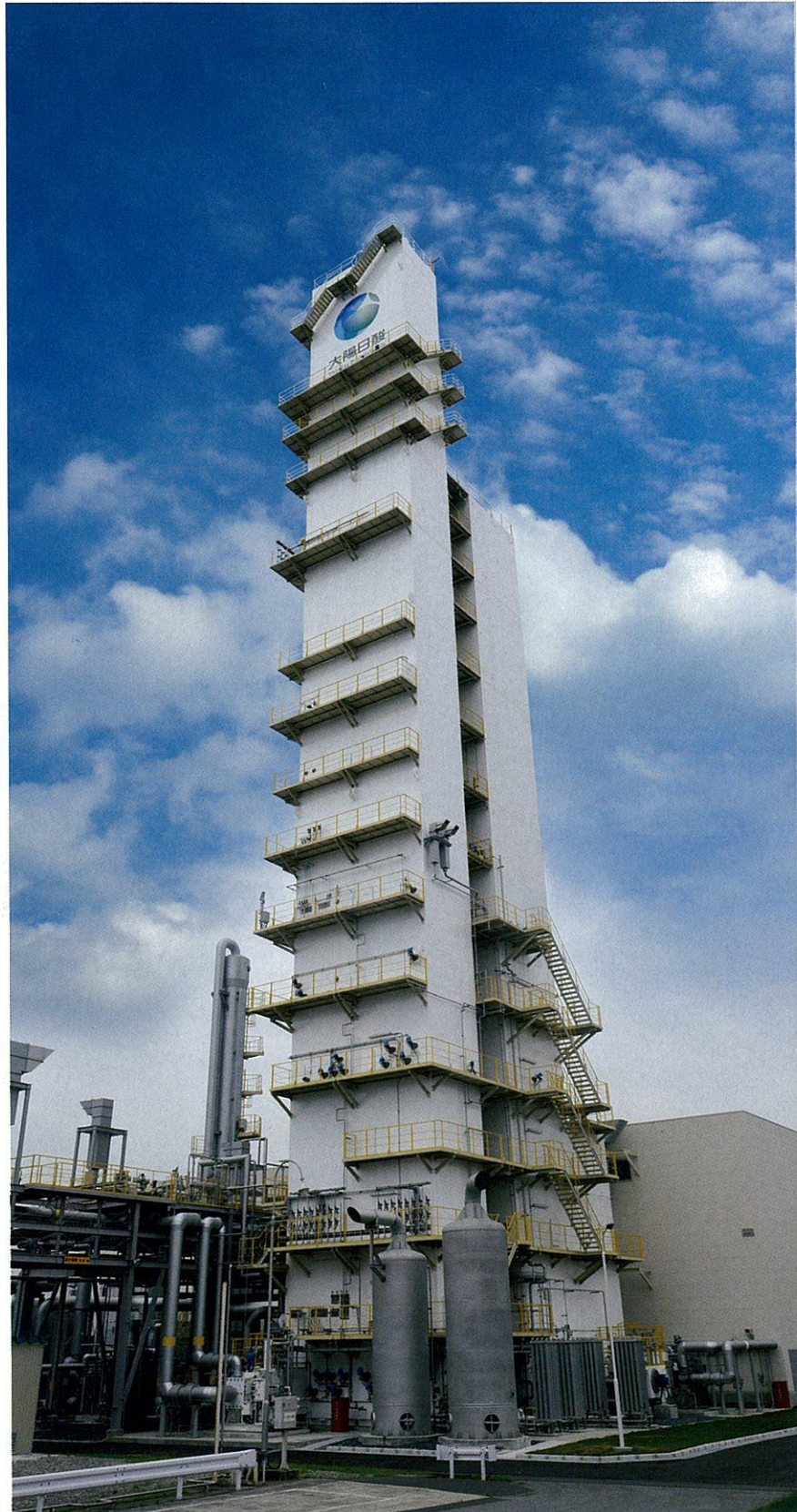


Sampling inspection

lot-by-lot sampling inspection
of packaged bottles



Shipping Approval



200kg/y No.2 Plant, Sodegaura Factory

Product Specifications

Water-¹⁸O



Formula : H₂¹⁸O

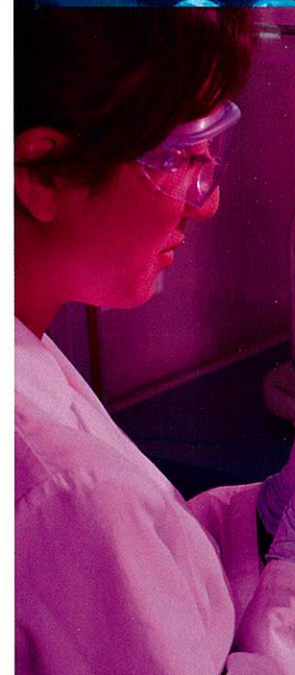
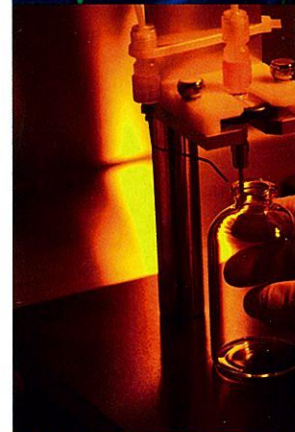
Chemical purity : >99.99%

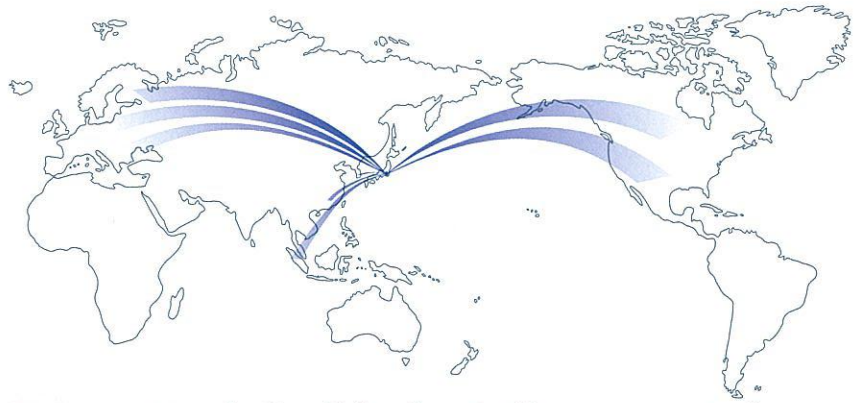
Molecular weight : 19.98

Package size : 10grams, 20grams and 50grams

Container : glass vial septum top and aluminium crimp seal

Test	Unit	Specification	Method
Oxygen- ¹⁸ O	atom%	≥98	MS
Oxygen- ¹⁷ O	atom%	<2	MS
Oxygen- ¹⁶ O	atom%	<2	MS
Appearance	—	Clear, Colorless, No visible object	Visual check
Chemical purity	%	>99.99	*
Na	mg/L	<2	ICP-MS
Mg	mg/L	<1	ICP-MS
K	mg/L	<1	ICP-MS
Ca	mg/L	<1	ICP-MS
Fe	mg/L	<0.1	ICP-MS
Cu	mg/L	<1	ICP-MS
Zn	mg/L	<1	ICP-MS
NH ₄ ⁺	mg/L	<1	IC
F ⁻	mg/L	<1	IC
Cl ⁻	mg/L	<1	IC
Br ⁻	mg/L	<1	IC
NO ₃ ⁻	mg/L	<1	IC
PO ₄ ³⁻	mg/L	<1	IC
SO ₄ ²⁻	mg/L	<1	IC
I ⁻	mg/L	<1	IC
Total Organic Carbon	mg/L	<5	TOC analyzer
Conductivity	mS/m	<0.3	Conductivity meter
pH	—	5.5-8.0	pH meter
Microbial limit	cfu/mL	<1	Membrane filter
Pyrogenicity	EU/mL	<0.25	LAL





Integrated & Global Support for Ever Increasing Demand

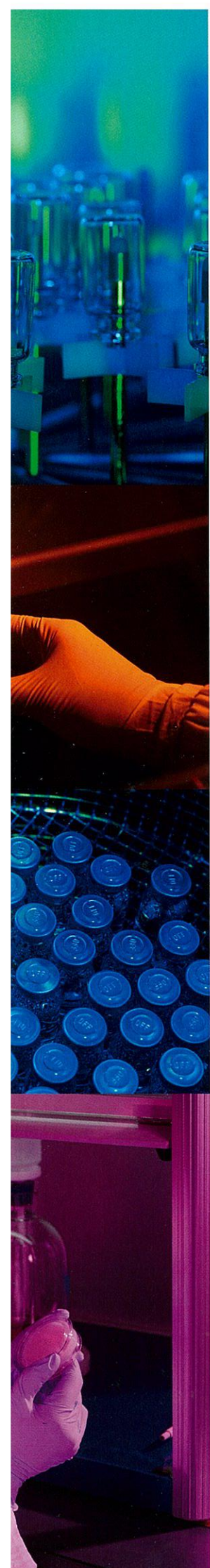
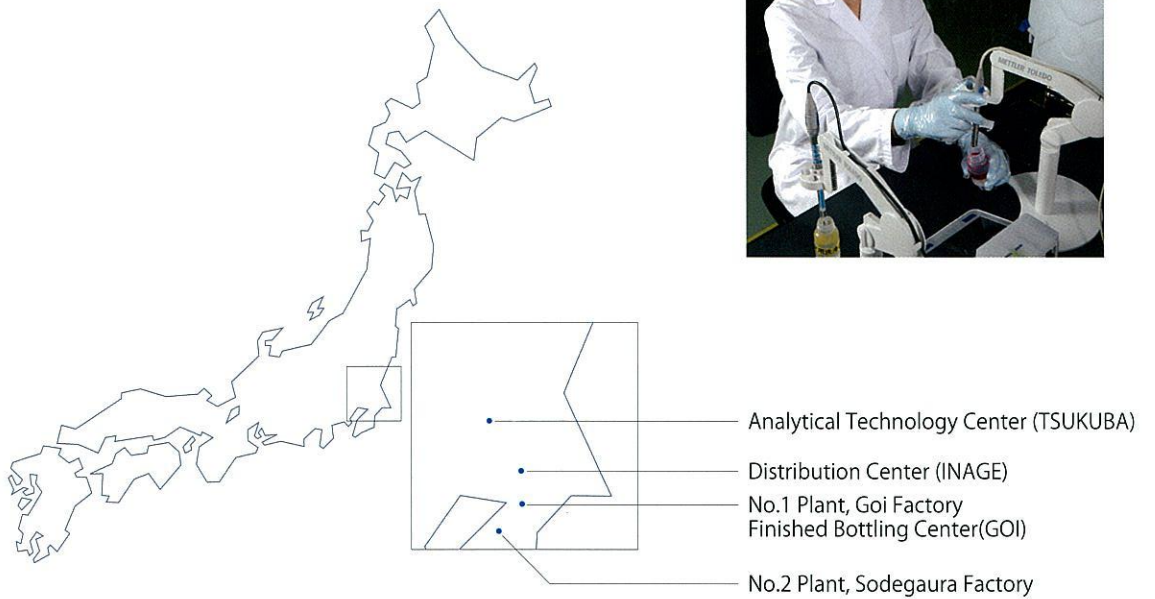
Finished Bottling Center



Distribution Center



Analytical Technology Center





TAIYO NIPPON SANSO
The Gas Professionals

TAIYO NIPPON SANSO Corporation

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