

BRENNTAG

WATER – The Universal Solvent



John Dailey

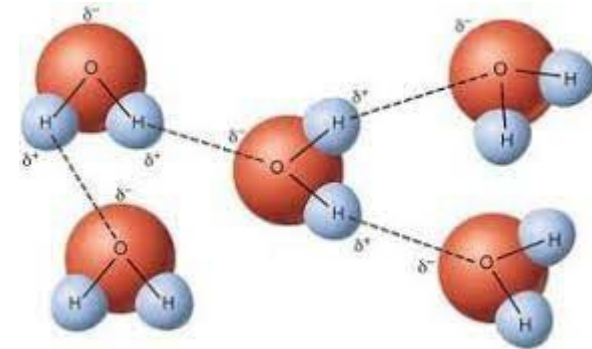
SAFETY FIRST

- S** Safety First
- A** Accidents cost lives
- F** Faster is not always better
- E** Expect the unexpected
- T** Think before you act
- Y** You can make the difference

'Industrial Waste Treatment, Second Edition, Volume 1

H₂O

- What is water
 - Sources
 - Surface Tension
- Uses of Water
- How to test
 - What do we look for and why



Water Sources

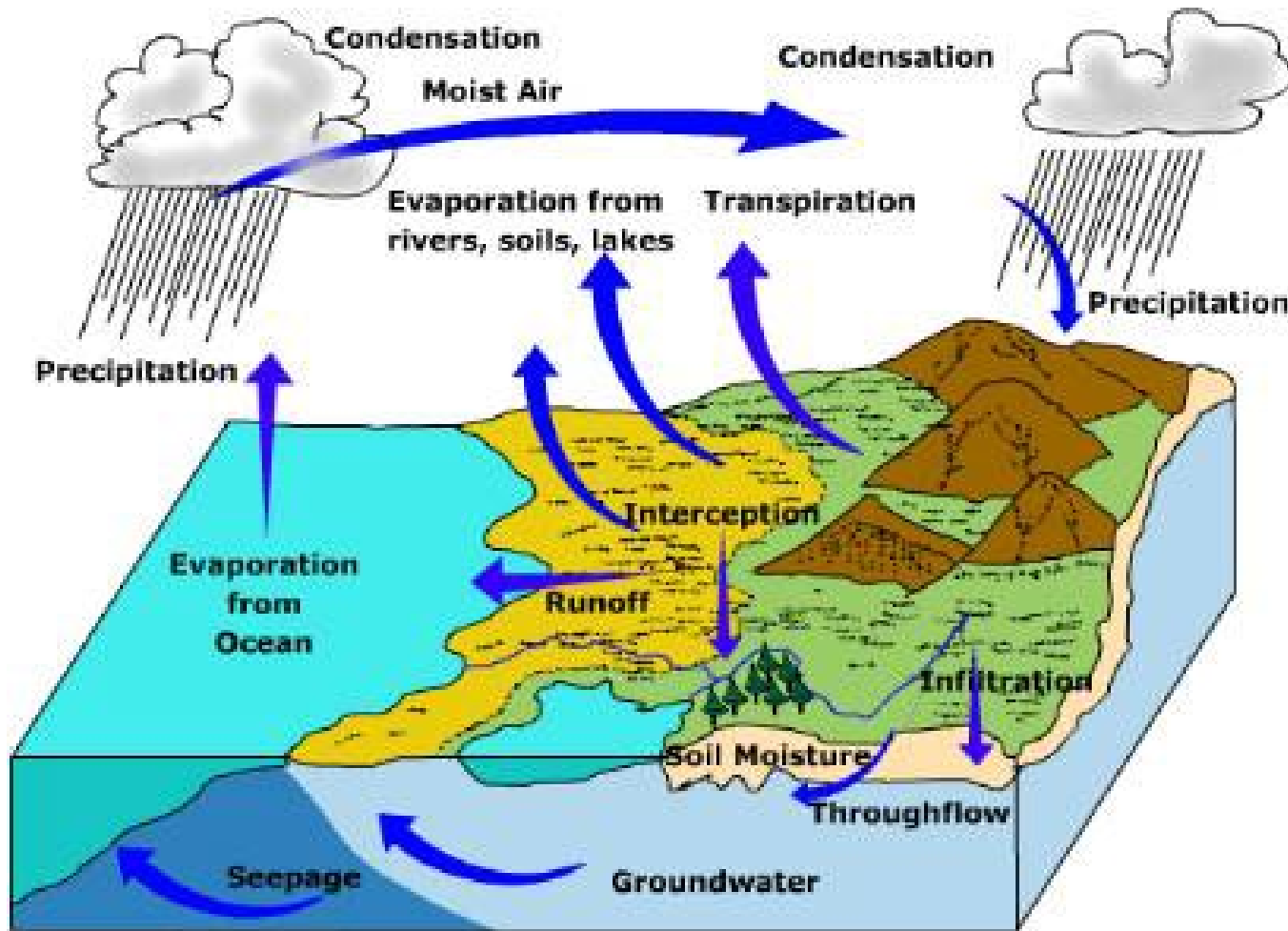
 Hydrology

 Sources

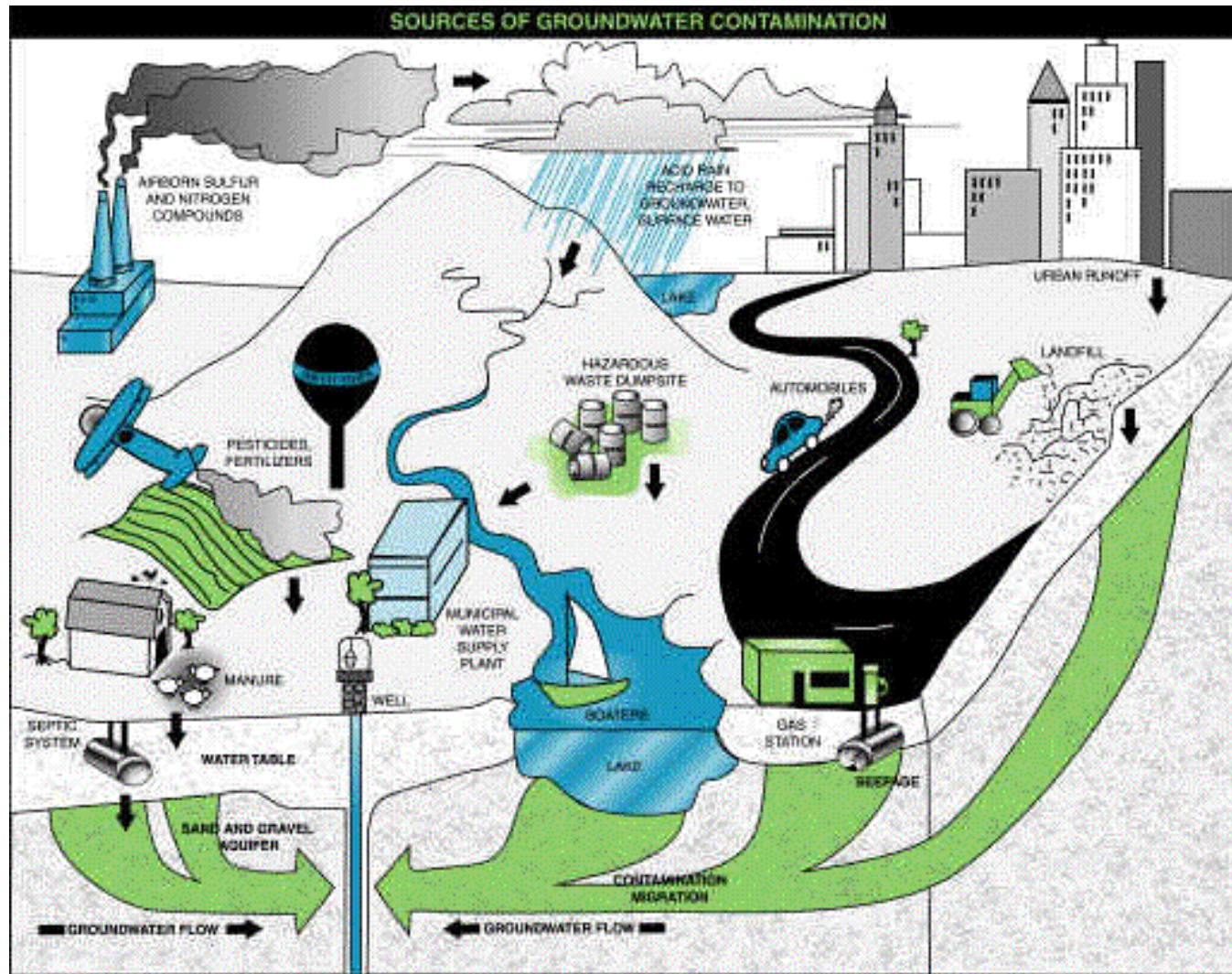
 Conservation

 Protection

Hydrologic Cycle



Source Water Quality



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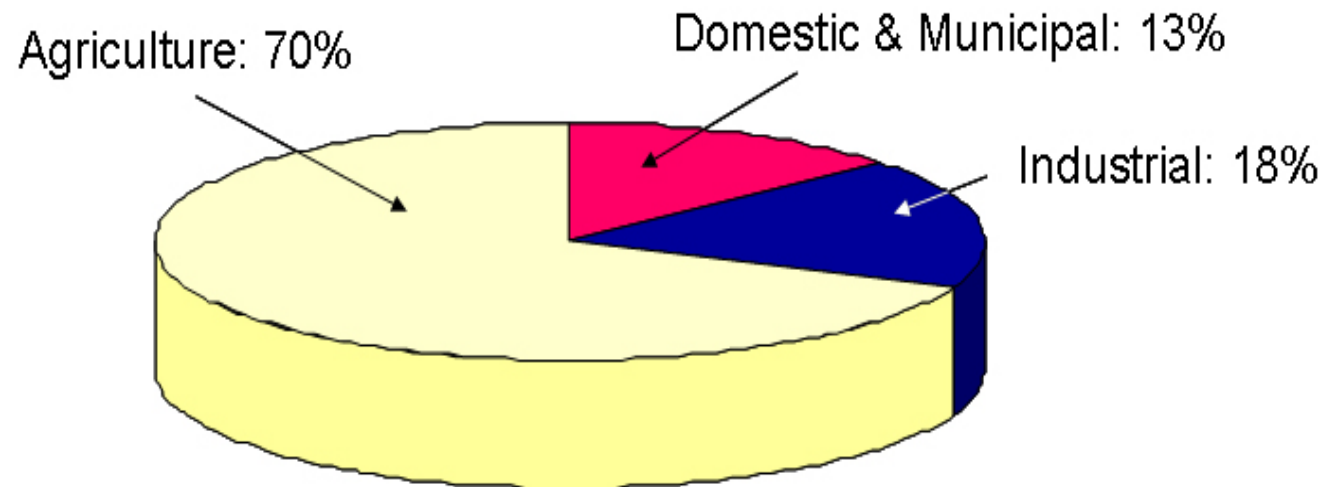
Where is Water Used

Domestic Use

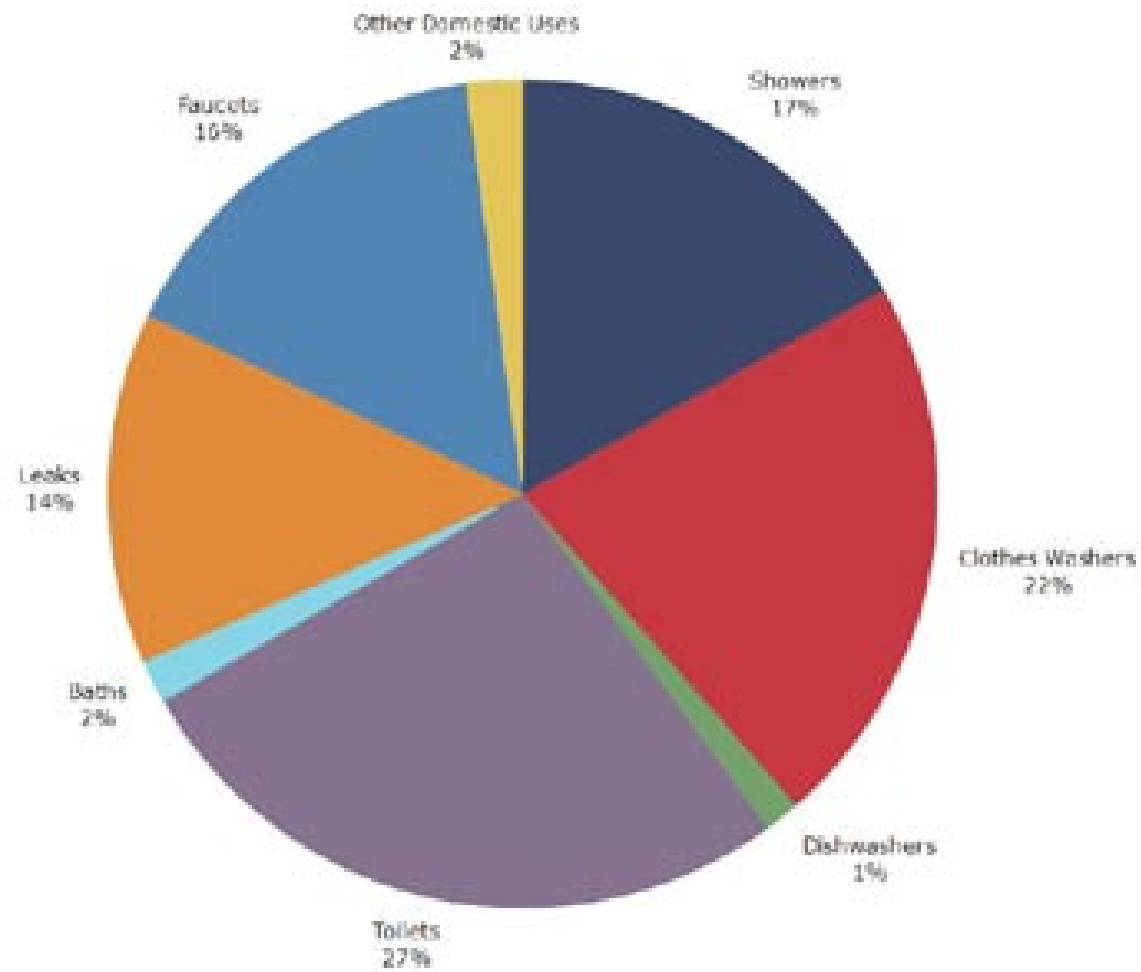
- Residential
- Commercial
- Institutional

Industrial

Agriculture



Domestic Usage



Industrial Water Use

Process Water

Cleaning

Cooling

Boiler

Transportation

Table 1: Typical Water Use Per Ton of Product

Paper	21,000 - 528,000 gallons
Beer	2,113 - 6,604 gallons
Sugar	792 - 105,668 gallons
Steel	528 – 92,460 gallons
Soap	264 – 9,246 gallons
Gasoline	26 – 10,566 gallons

Source: United Nations World Water Assessment Programme, United Nations World Water Development Report: Water in a Changing World, 2009.

WATER CHARACTERISTICS

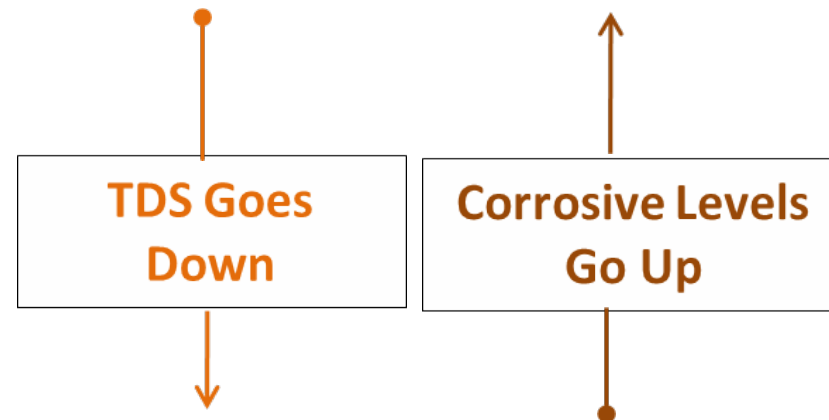
- Many different characteristics of water
 - Surface Water
 - Streams, lakes and reservoirs
 - Variable – Temperature & Turbidity
 - Ground Water
 - Consistent
 - Softened
 - Disinfection
 - Free Chlorine
 - Total Chlorine

WATER QUALITY IN INDUSTRIAL USE

-  Well Water
-  City Water
-  City Softened
-  Reverse Osmosis
-  Deionized Water
-  Distilled Water

WATER QUALITY

- Total Dissolved Solids
- Conductivity
- Corrosive
- Characteristics
- Chlorine (Y) (N)
- Copper (Y) (N)
- Aluminum (Y) (N)



CORROSION CONTROL/ MINERAL SEQUESTRATION

- Growing Need Today
- Easy to Use Methods Available



Blended Phosphates

- FDA approve & Used in Foods & Beverages
- Corrosion control
- Sequester minerals
- Blended chemistry
Ortho – barrier film
Poly -- sequester



How to test & what to look for?



Agilent 7890GC with 5975MSD



CONTAMINANTS

Primary STANDARDS

- Known **health effects**

Secondary STANDARDS

- Known as **aesthetics**

PRIMARY CONTAMINANTS

- **Inorganic Chemical Contaminants (IOC's)**
- **Synthetic Organic Chemicals (SOC's)**
- **Volatile Organic Chemicals (VOC's)**
- **Lead/Copper (LCR) - Action Levels**
- **Total Trihalomethanes (TTHM's)**
- **Halo Acetic Acids (HAA5's)**
- **Turbidity**
- **Radioactive Contaminants**
- **Total Coliform Bacteria**
- **Arsenic**

REGULATIONS

U.S. E.P.A.

State Regulations		Local Regulations
<u>Clean Water Act</u>	<u>Clean Air Act</u>	<u>Sludge Regulations</u>
POTW Pretreatment Regulations NPDES Regulations Federal Drinking Water Standards ANSI/NSF Safe Drinking Water Act	NESHAP Title V	40 CFR 503 RCRA Class 1 Biosolids Regulations

- *Federal Standards can not be exceeded.
- *Local and State regulators have authority to amend regulations that would deliver limits lower than Federal Standards.



QUESTIONS

