

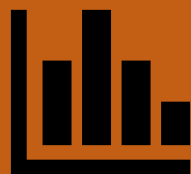
POLLUTION PREVENTION PRACTICES (P2) IN METAL FINISHING

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LASAN





- ❖ The Importance of Metal Finishing.
- ❖ The Core operations
- ❖ Federal Categories &
- ❖ Sources of pollutants.



- ❖ Existing P2 list
- ❖ The 3 compartments
- ❖ The data & applications
- ❖ The look of pollution
- ❖ Housekeeping issues & BMPs



- ❖ Green Chemistry (GC)
- ❖ Intersection of P2/GC
- ❖ Advancement of GC
- ❖ Certification



❖ The Importance of Metal Finishing.

It serves an important service for:

- ❖ **Corrosion protection/resistance**
- ❖ **Functional (friction, wear, conductivity, hardness, other extreme conditions)**
- ❖ **Decorative/appearance**

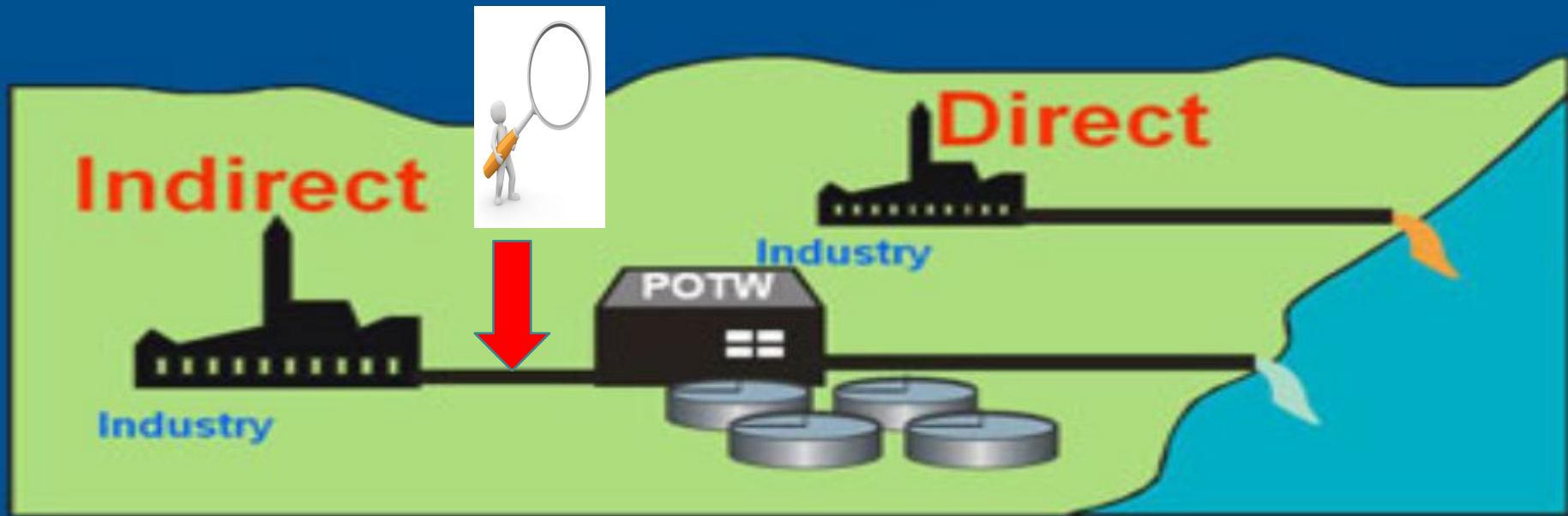


Metal Finishing: Its presence

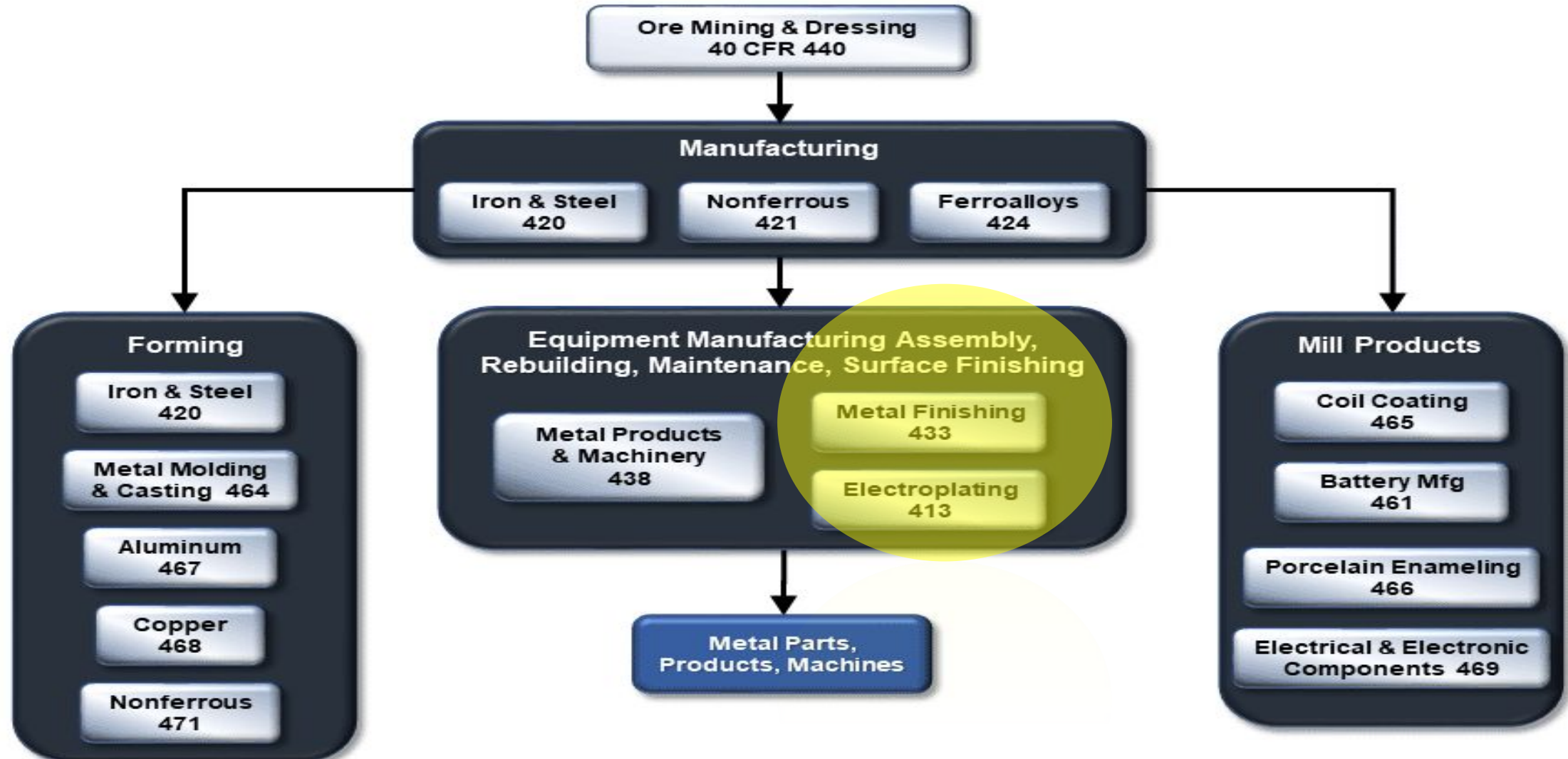


Clean Water Act

PRETREATMENT: Applies to Indirect Discharges

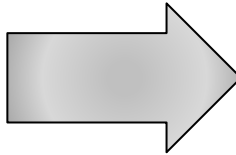


Metals Coverage Under Effluent Guidelines Regulations



Two Federal categories

40 CFR 413

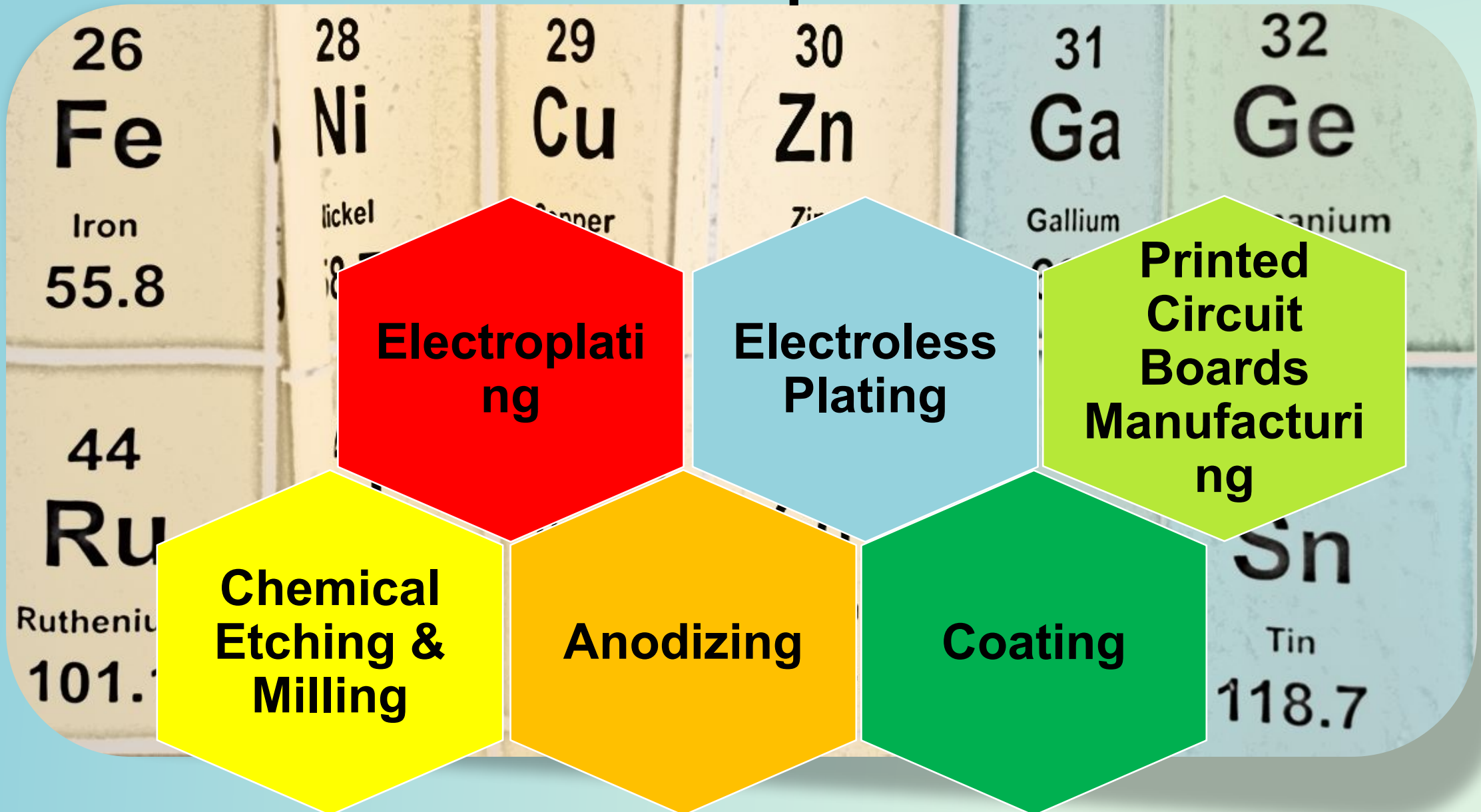


40 CFR 433

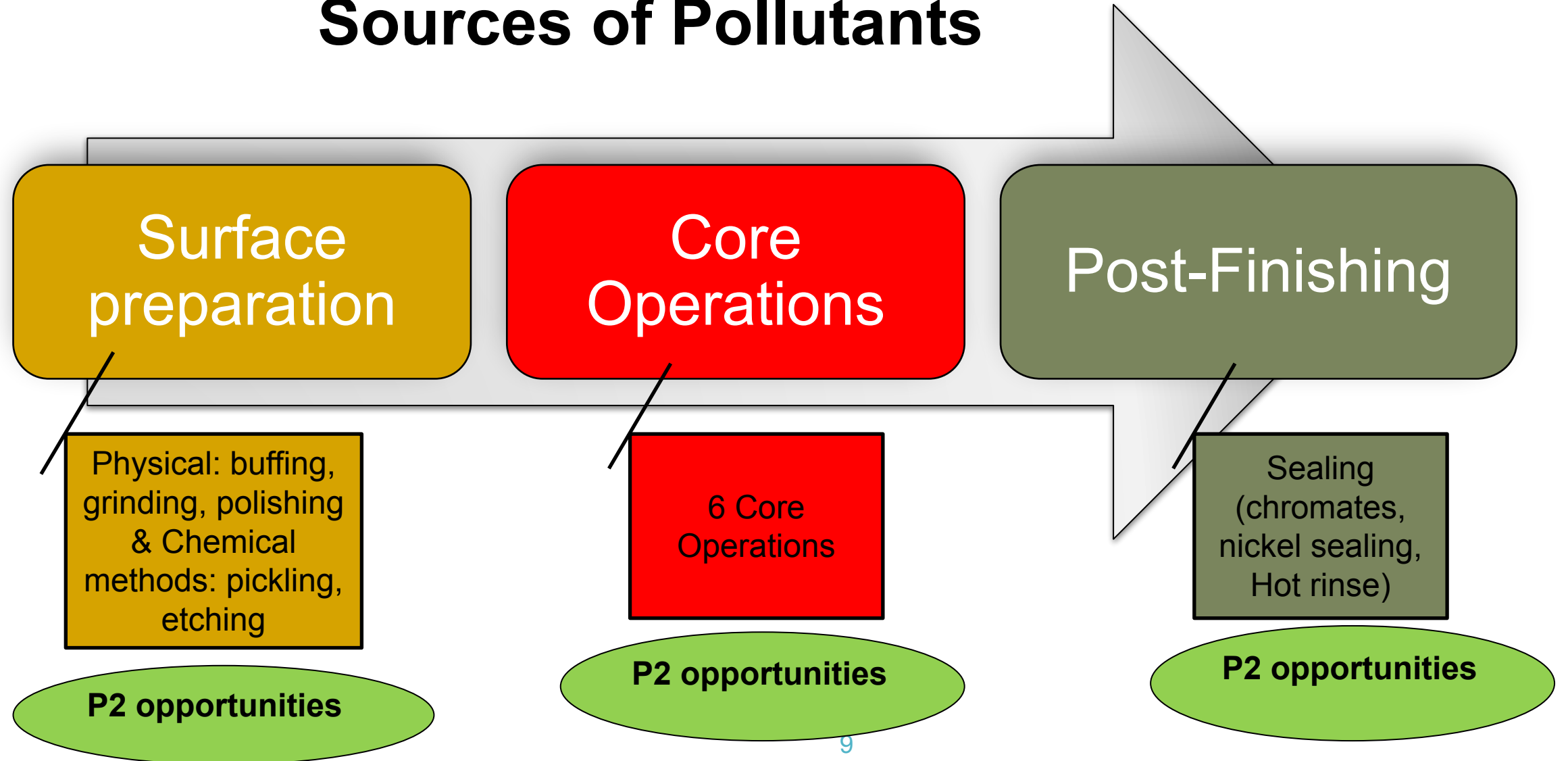
- **Before 1982**
- **< 10K gpd**
- **P2 opportunities**

- **After 1982**
- **> 10K gpd**
- **P2 opportunities**

The core operations



Sources of Pollutants





- ❖ Existing P2 list
- ❖ The 3 compartments
- ❖ The data & applications
- ❖ The look of pollution
- ❖ Housekeeping issues & BMPs

The Existing P2 List

Operations & Maintenance

**Housekeeping
& Employee
training**

**Maintenance
Operations**

**Other
Recycling
Programs**

Water Conservation

**Rinsing
Efficiency**

Water Controls

**Improved
wastewater
Treatment**

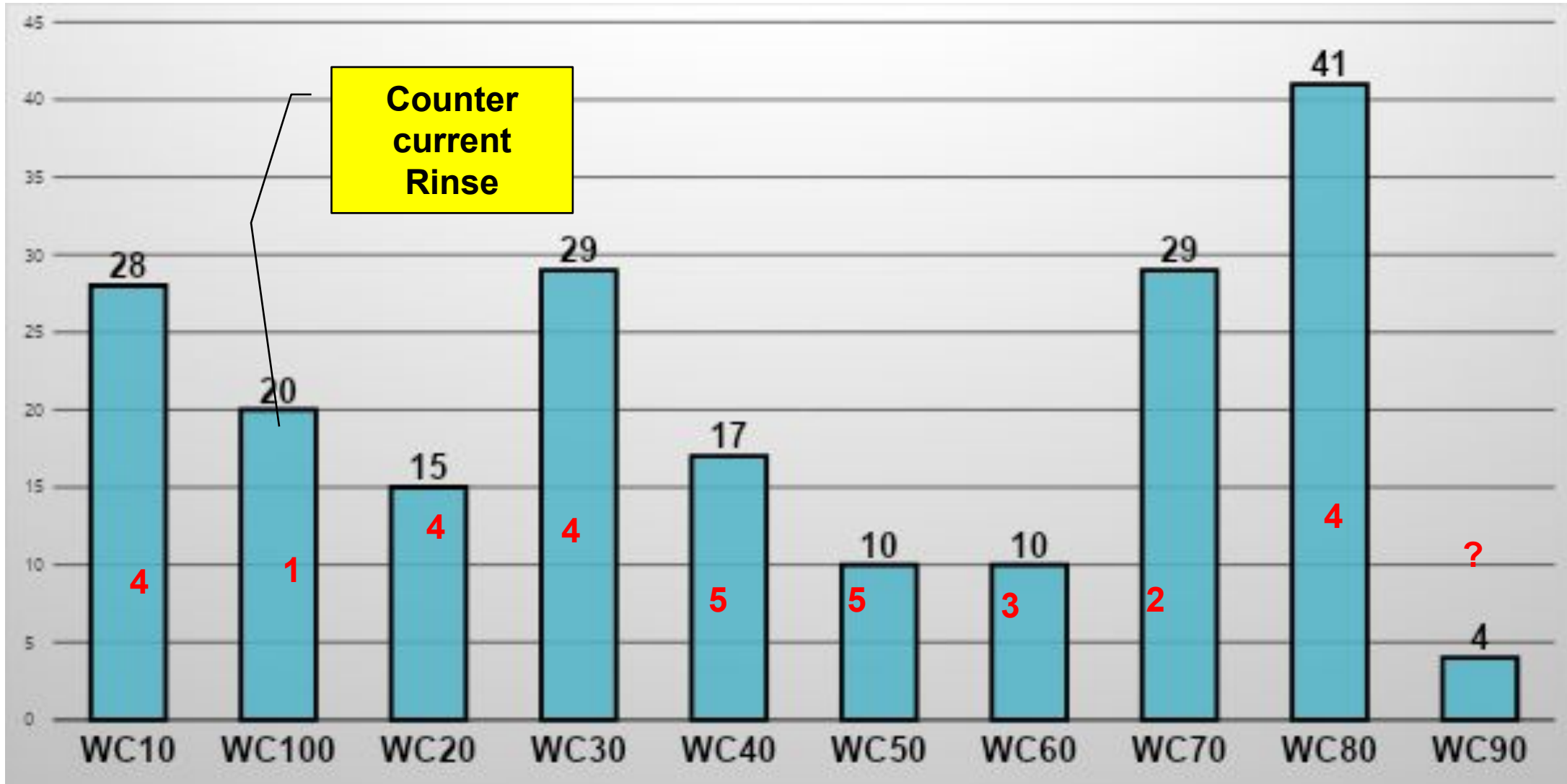
CEC or COCs Reduction

**Chemical
Substitution**

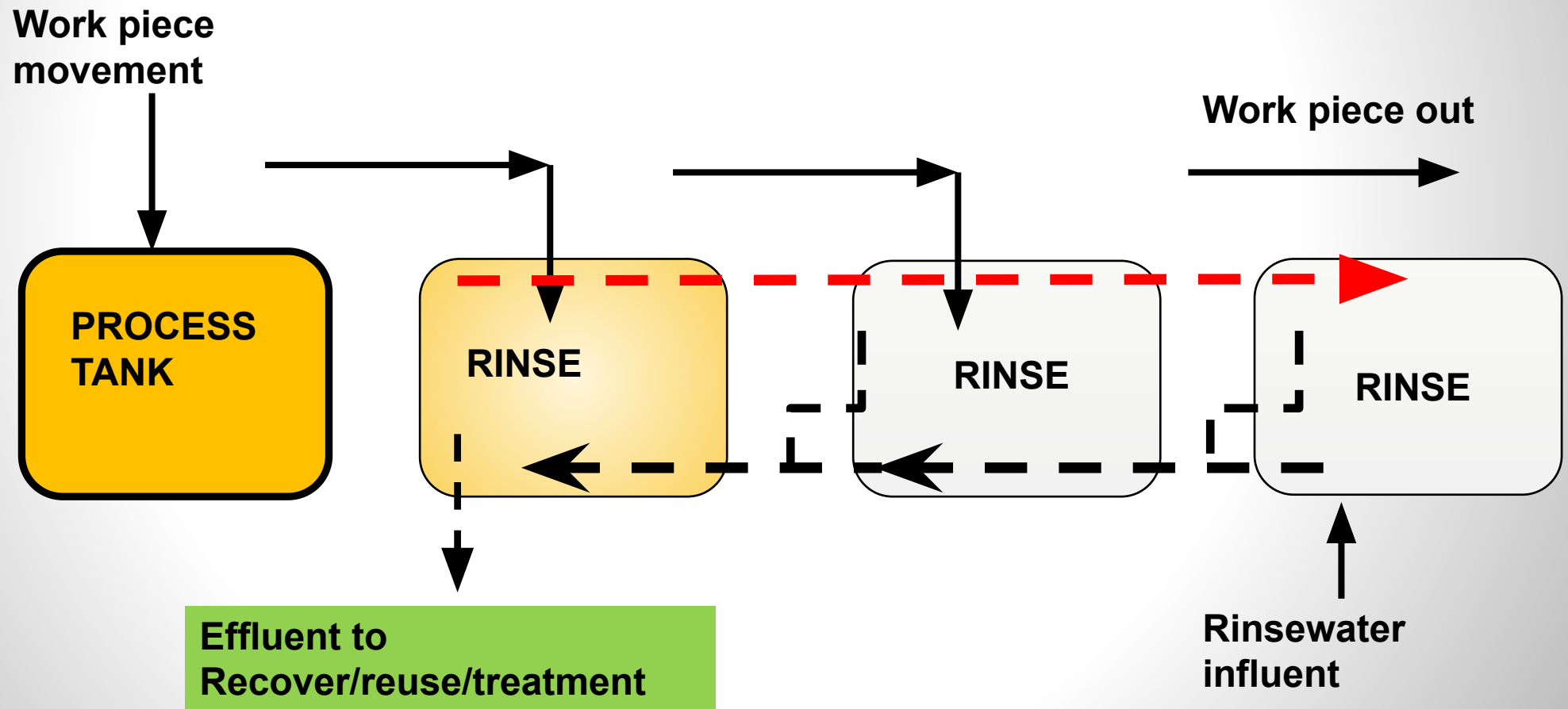
**Process
Reformulation**

**Reuse & Recovery
Practices**

Pollution Prevention (P2) in Water



Counter current Rinsing



Countercurrent Rinsing features

¹Two rinses are better than one. The benefits of counter flow rinsing: Time spent in two rinses as part of a double counter flow is more effective than the same time spent in a single rinse. In this regard the rinsing efficiency can be improved by 10-20 times more, while reducing water consumption by more than 50%.

Rinsing efficiency –greatest water reduction option is countercurrent.

Rinse water flow opposite to work piece.

Fresh water is added to last rinse tank

Wastewater exist from 1st tank

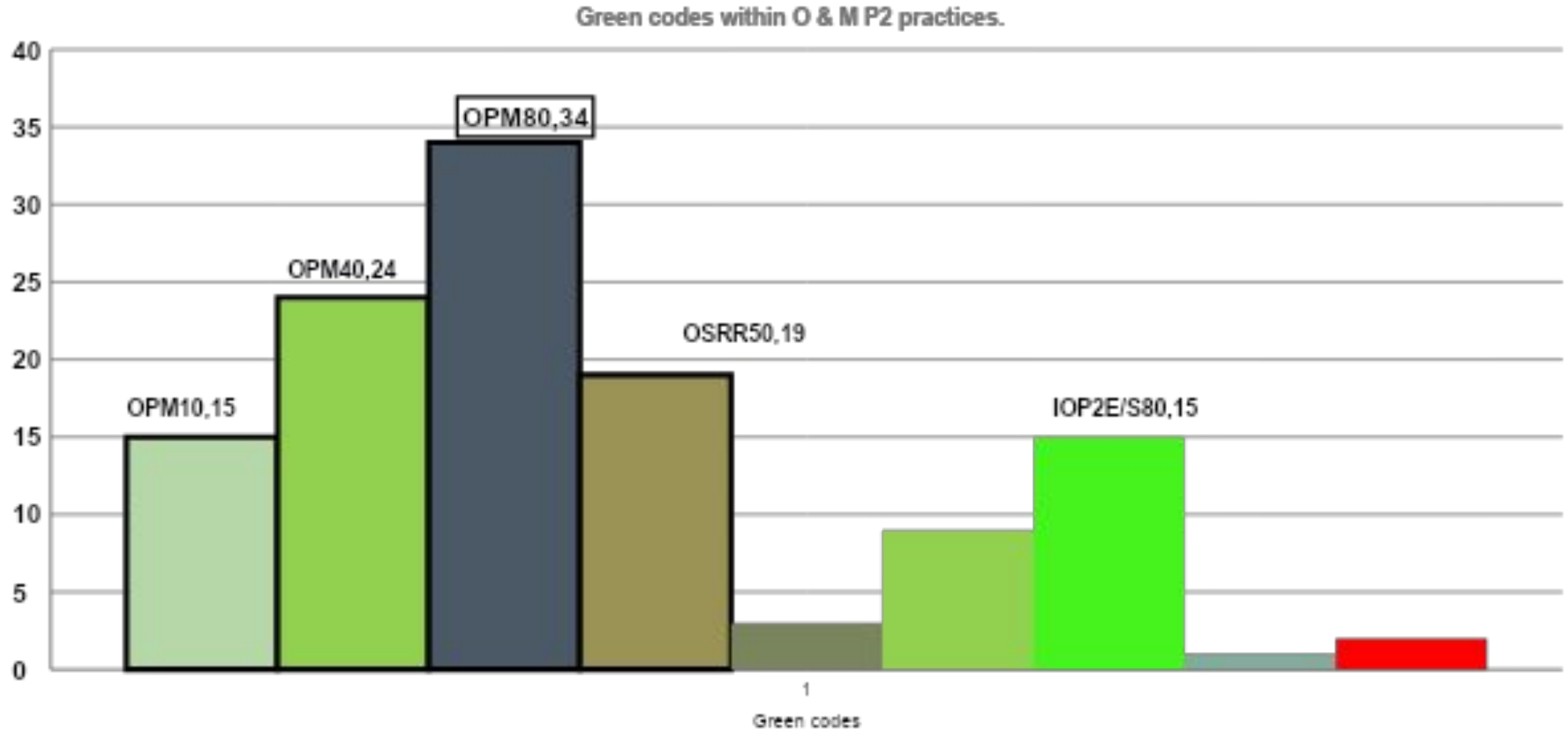
Three stage -95 % reduction

Two stages -90 %

Requires tank layout configuration/piping

¹The Importance of Rinsing in Metal Finishing Operations-06/15/2015. [The Importance of Rinsing in Metal Finishing Operations | Products Finishing \(pfonline.com\)](#)

Pollution Prevention (P2) in Operations & Maintenance



Operation & Maintenance

Segregation of wastestream

- Wastewater treatment
- Compliance

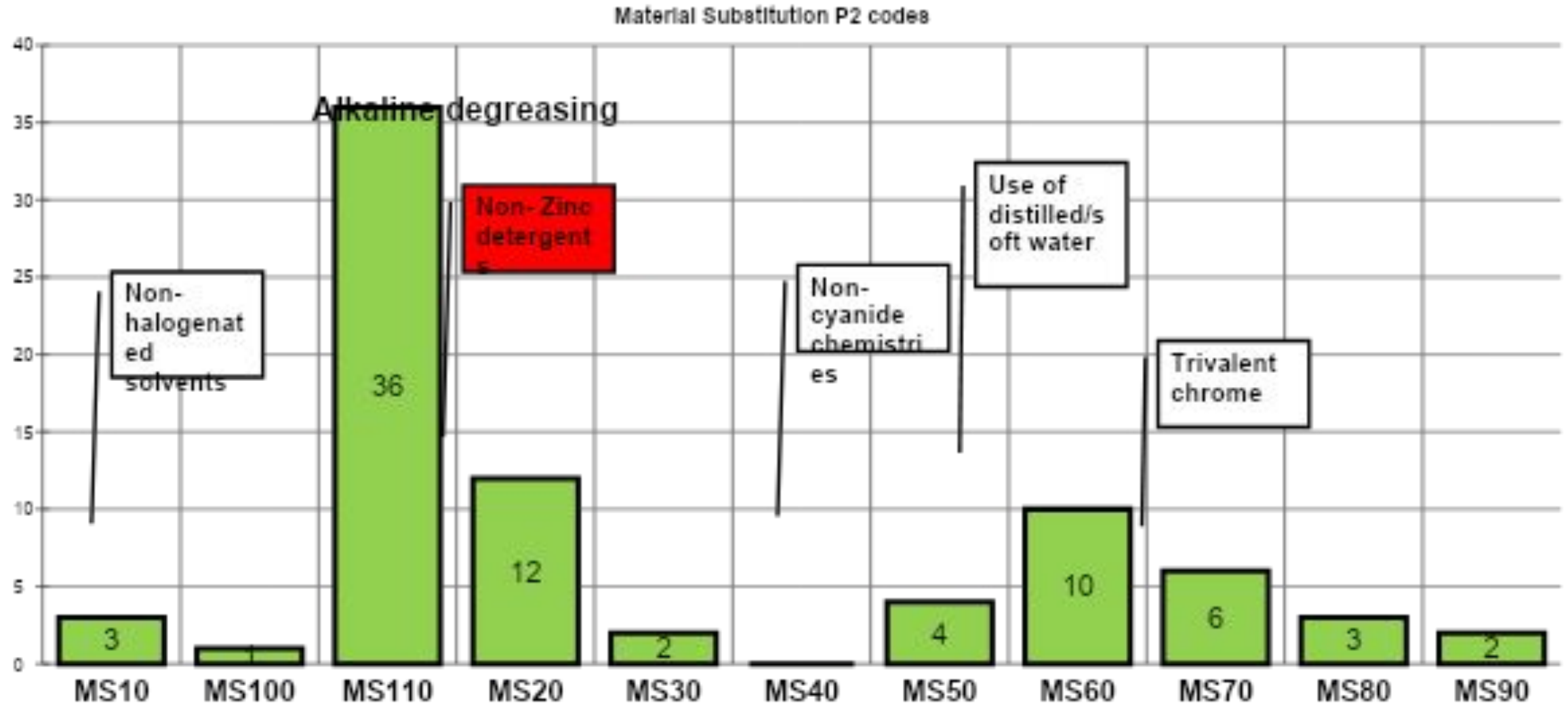
SB-14 (> 12 Kg of Haz waste or 12 Kg of e-Haz waste)

- California program

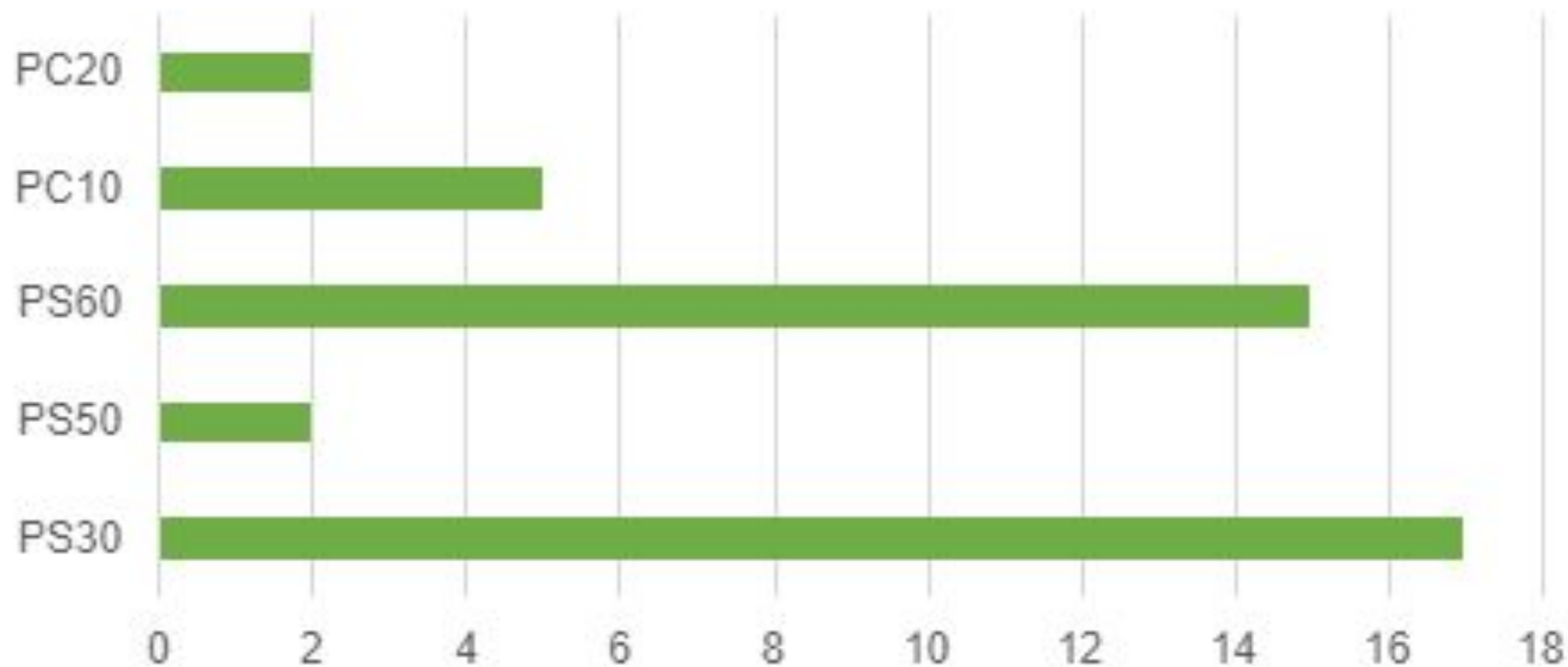
TOMP

- POTW permit
- Reduce cost
- Target to Eliminate TTOs

Pollution Prevention (P2)-Elimination of Chemicals of Concerns (CECs)



Product change & Process substitution



	PS30	PS50	PS60	PC10	PC20
■ Series1	17	2	15	5	2