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# *OUR JOURNEY AWAY FROM PFAS*



**TRANSENE**  
**COMPANY, INC.**

10 Electronics Ave. Danvers Mass. - [www.transene.com](http://www.transene.com)

# ACKNOWLEDGMENTS

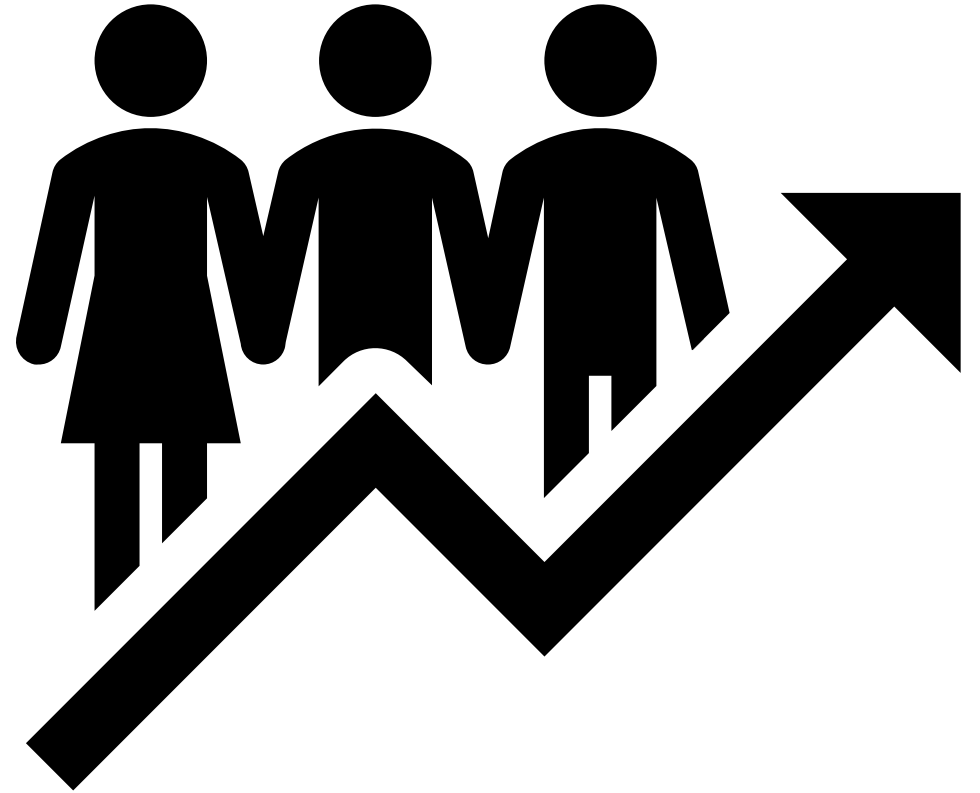
- **Students:** Rashmi Sharma, Chemistry; Shreyas Shelke, Plastics Engineering; Mohammad BagheriKashani, Plastics Engineering at UML
- **Investigator:** Prof. Ramaswamy Nagarajan, Plastics Engineering
- **Research Manager:** Dr. Gregory Morose, Toxics Use Reduction Institute
- TURI for funding academic research grant

# Who is Transene Company?

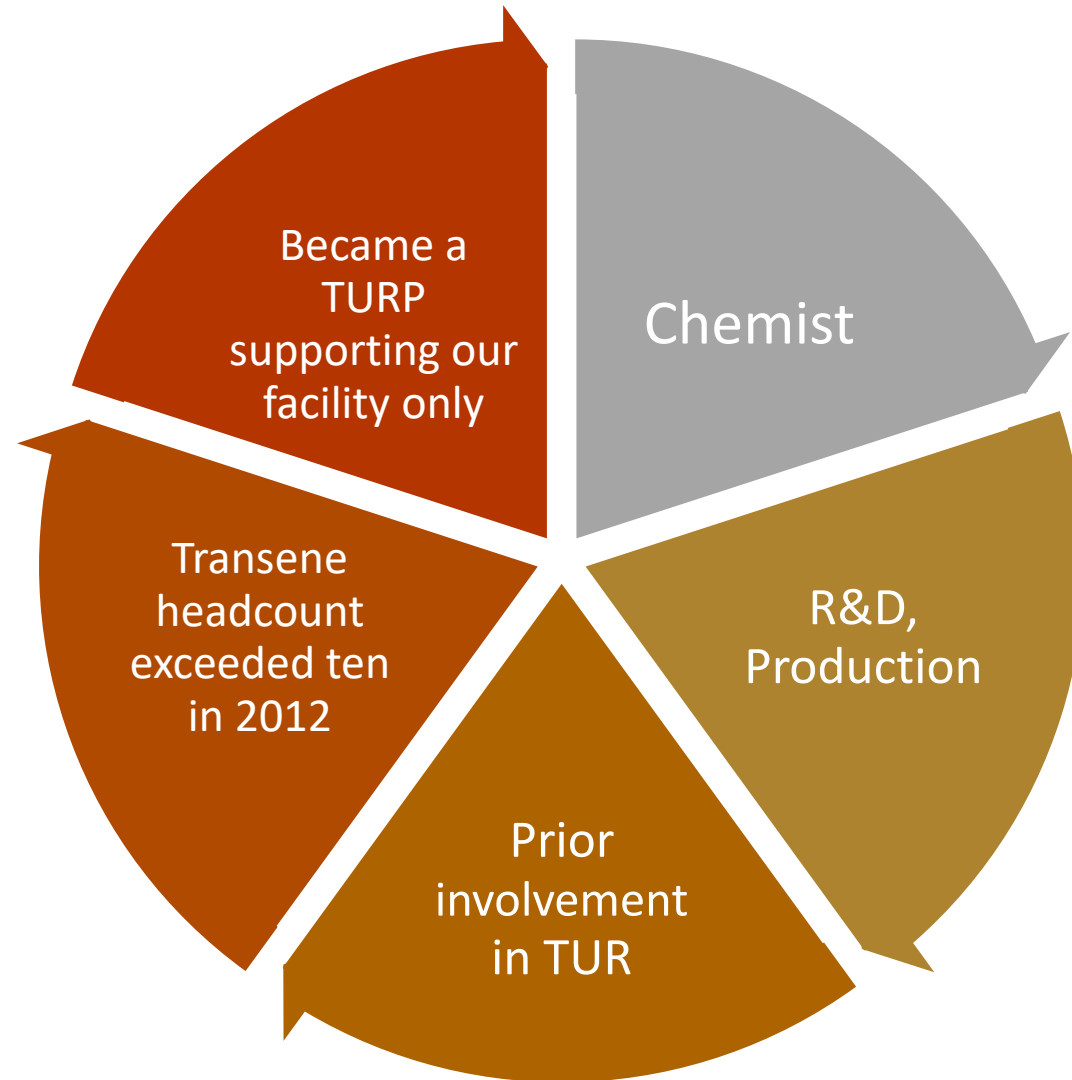


# COMPANY HISTORY

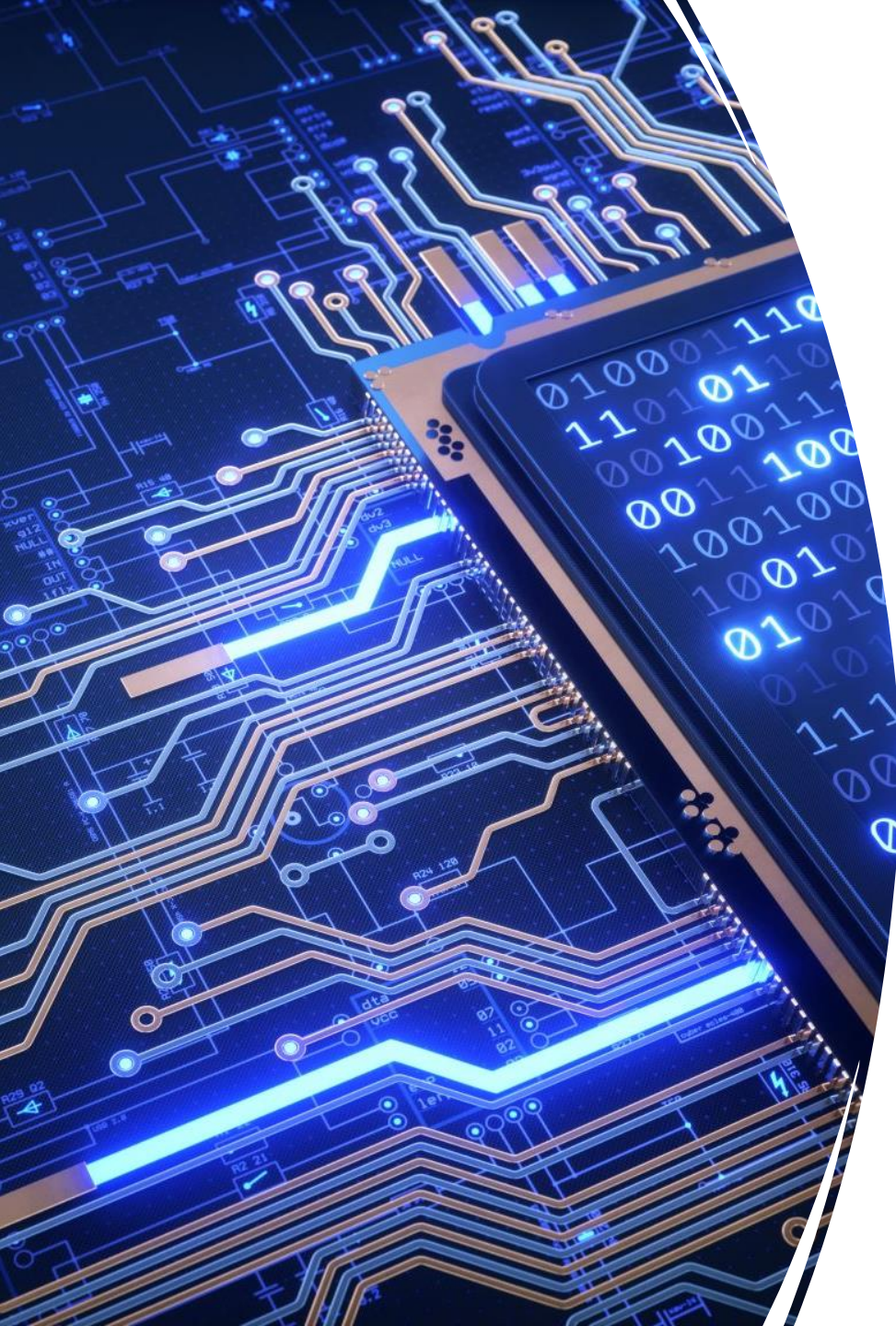
- Founded in 1965
- Manufacturer of electronic chemicals, diagnostic stains and reagents, analytical chemicals
- Factories in Danvers MA and Oakland CA
- 33 Employees



# MY BACKGROUND







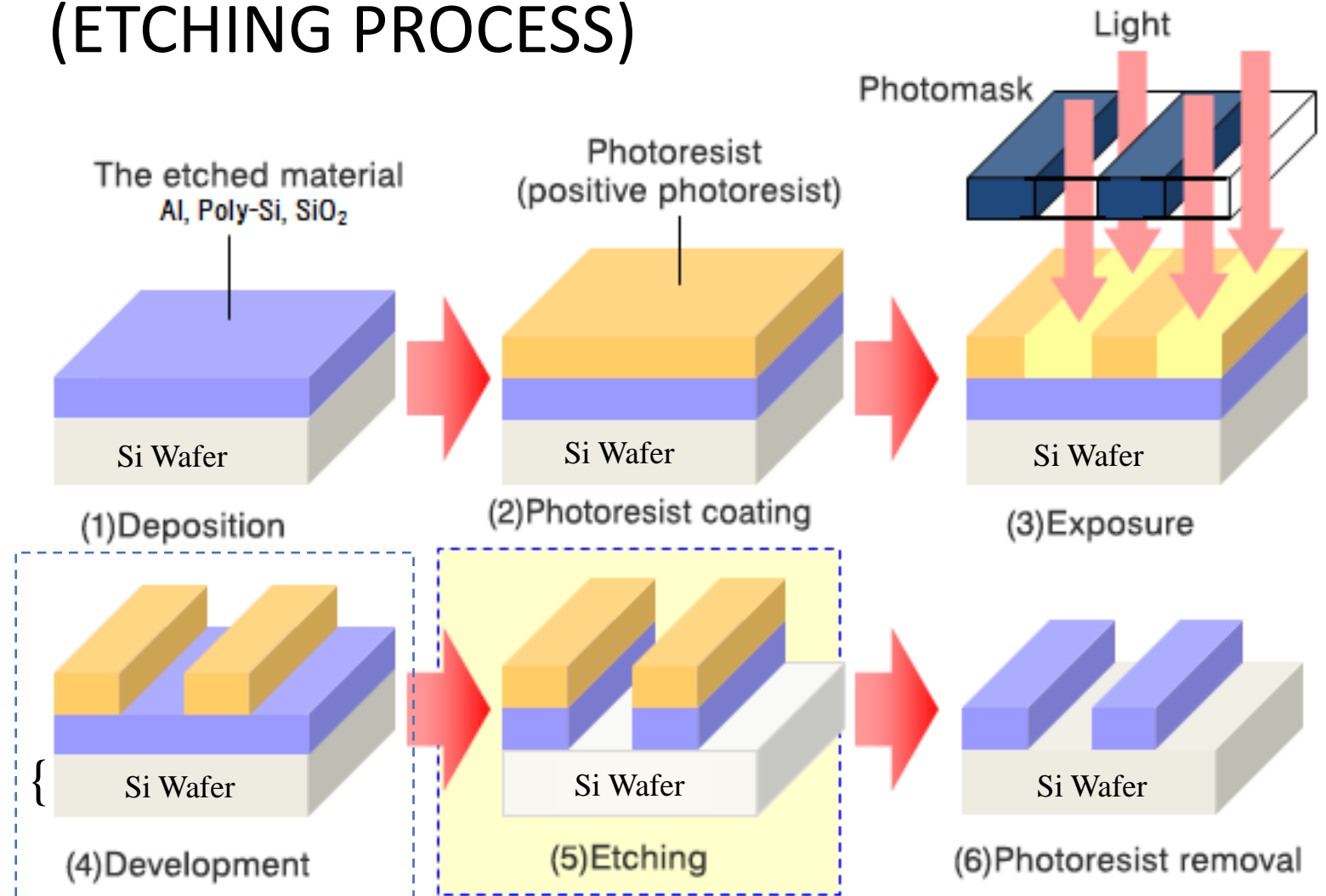
# WHO ARE ELECTRONICS CUSTOMERS?

- Semiconductor fabs
- Chip manufacturers
- MEMS
- Photonics
- Optics

# ROLE OF SURFACTANTS IN SEMICONDUCTOR INDUSTRY (ETCHING PROCESS)

## Desired Surfactant Properties:

- Increase the wettability of the etching solution
- Allow for release of gases
- No residue/contamination
- Effective at low concentration
- Low or no foaming



PFAS surfactants may be found in steps 4 - 6





# PFAS PERFORMANCE REQUIREMENTS

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**Compatibility:** Strongly acidic/oxidizing solutions - nitric acid, phosphoric acid etc.

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**Sufficient surface tension reduction:** 75 to 25-30 mN/m with < 0.1wt% surfactant concentration

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**Contaminants:** low sodium ions

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**Stability:** > 1 year shelf life in solution

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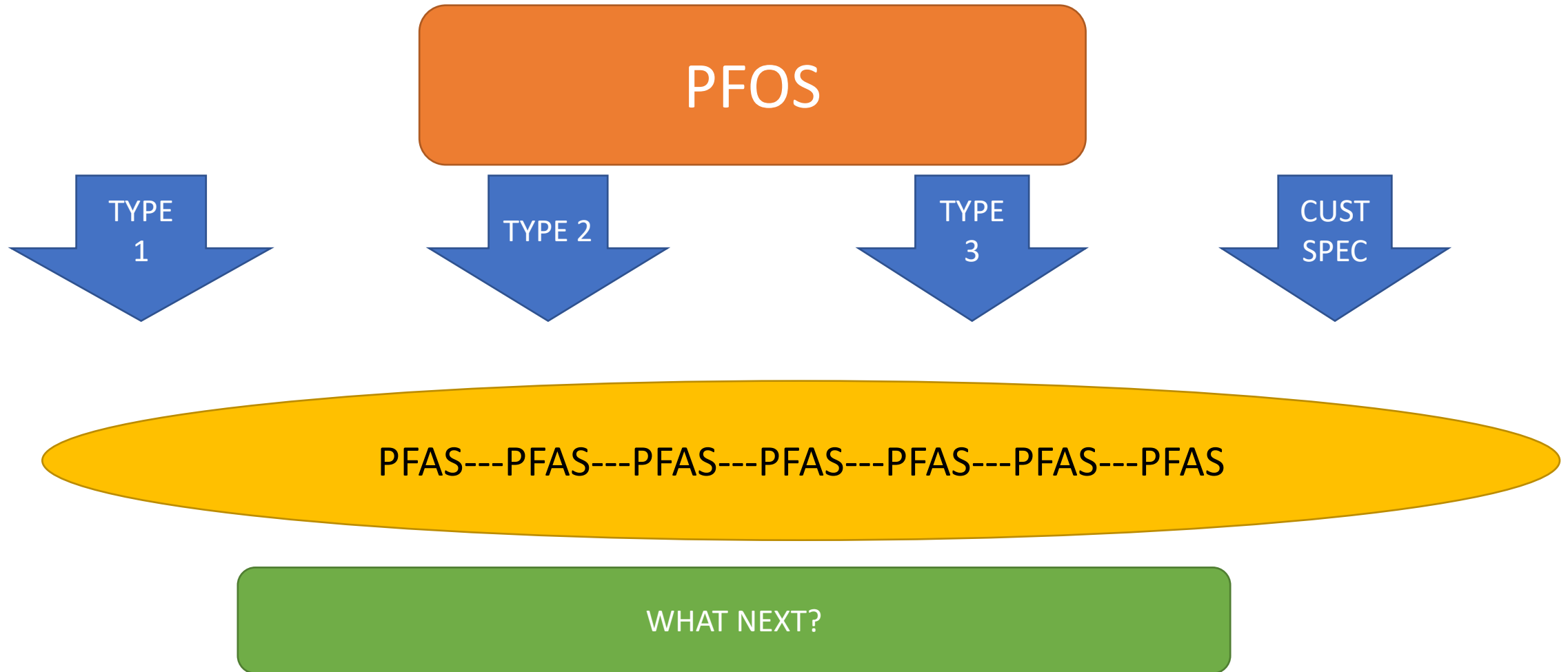
**Low foaming**

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**Cost**



# PFAS HISTORY AT TRANSENE



# TUR PLANNING FOR PFAS

## Awareness through reporting

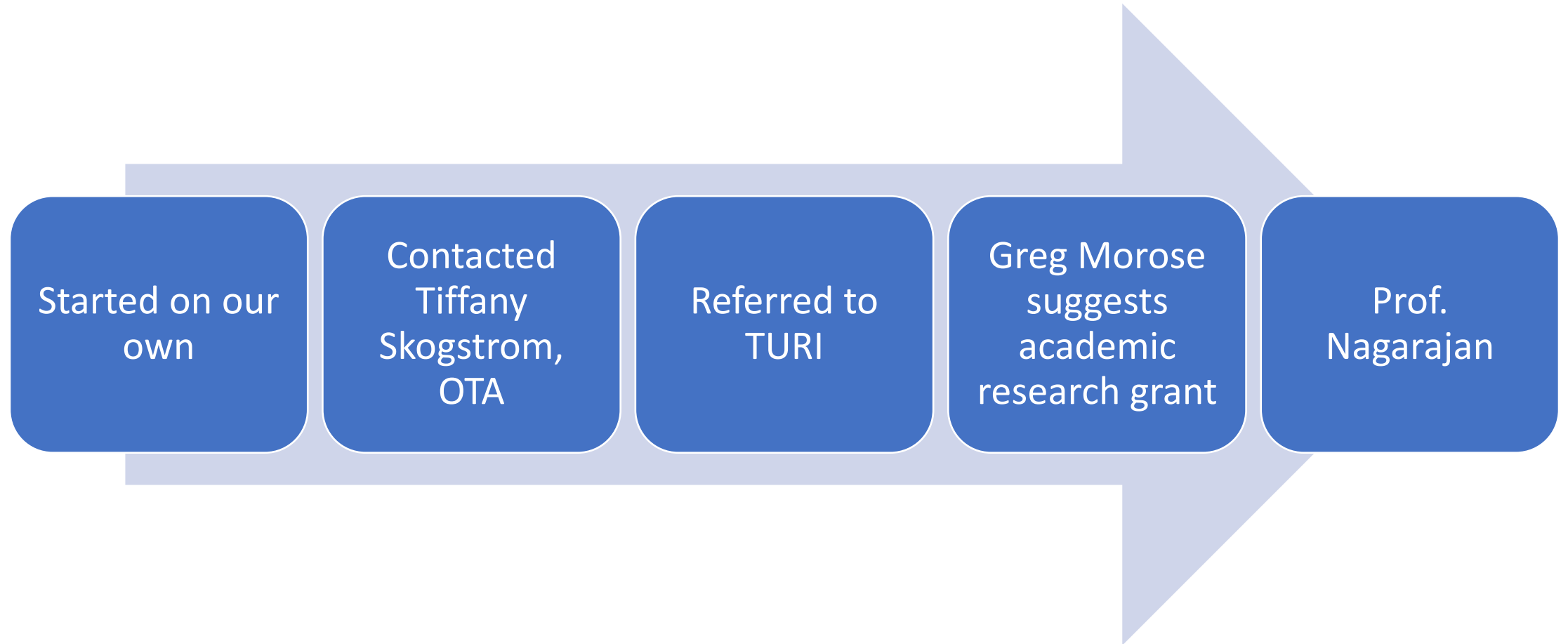
## Information sources

- Here! Conference sessions have been instrumental
- Customers
- Email lists (NEWMOA—Liz Harriman presentations)
- Vendor
- General news/information sources

## Limited resources

- Me
- West Coast QC assistance

# TRANSENE'S TUR PLANNING PROCESS FOR PFAS



# IDENTIFYING OPTIONS

Transene focused on sources  
we knew

UML group had other  
options

- Group technology
- Related materials

# IMPORTANCE OF COLLABORATION

Breadth of ideas

Resource combination

- UML facilities for testing
- Transene resources for chemicals, substrates
- Access to customers

Replacement screening to avoid regrettable replacements



# CUSTOMER ACCEPTANCE



**Customers use  
the chemicals in  
different ways  
(spray, circulate,  
etc.)**

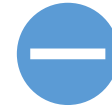


**Easy targets—  
one-off  
purchases**

Initial phase  
engendered some  
comments about  
foaming—slight level  
reduction



**No complaints?  
Let some  
customers know  
the change has  
been made**



**Still no  
complaints?  
Start  
qualifications  
with the big  
customers**



**Not a 100%  
success rate**

# CONCLUSIONS

- The process works!
  - Referrals
  - Collaboration
    - Strength of industry-academic collaboration
- PFAS replacement is viable
- Cost impact; sales impact
- Reduced liability
- PFAS replacement makes me feel good