



# Drilling Chemicals Opportunities

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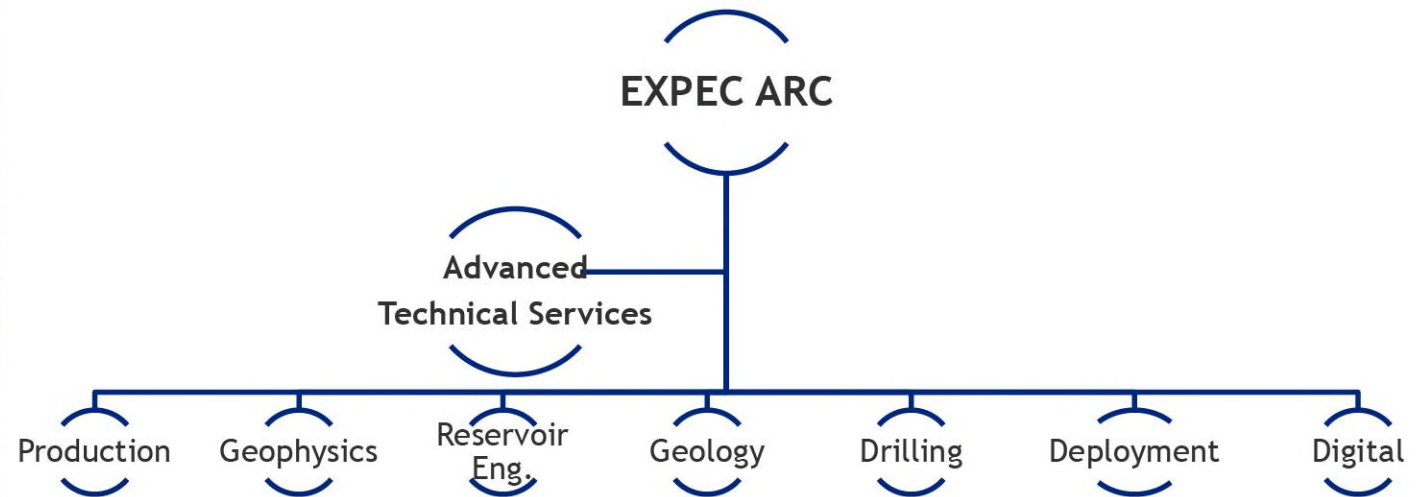
# EXPEC ARC

## Vision

To become the preeminent center for subsurface technology research and development; also globally renowned for invention and innovation.

## Mission

To conduct the research and development of subsurface technology to engineer innovative, high-impact solutions and tools for Saudi Aramco Upstream business line.



# Advanced Technical Services Division

## Who are we?

Technical services and fit-for-purpose studies provider covering all aspects of the **Upstream** business line.

Starting with exploration, drilling and development, all the way to energy operations for both conventional and unconventional fields, including Geothermal applications.

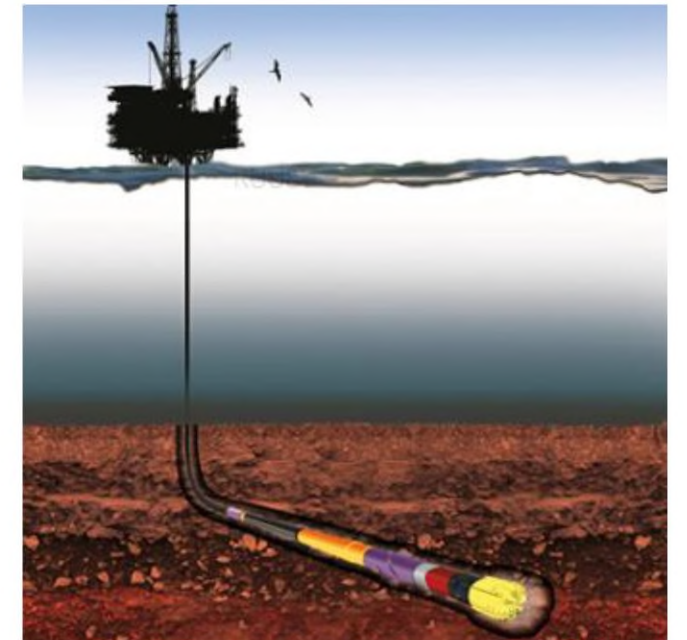
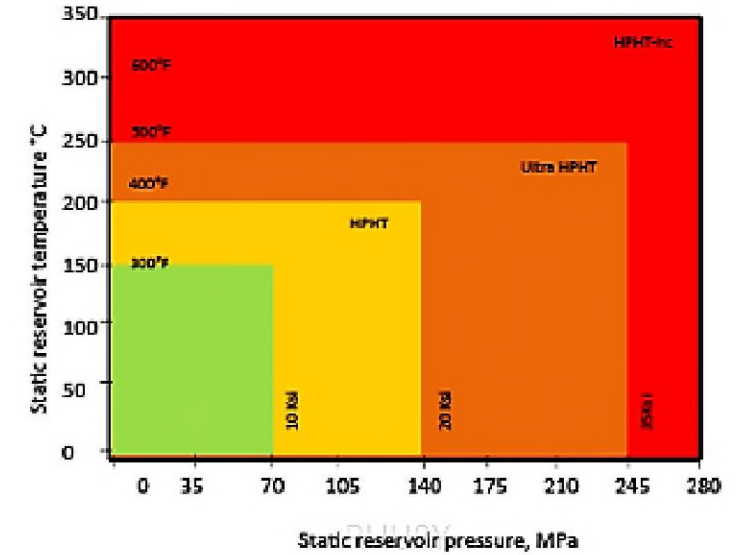
### **Business Segments:**

- Drilling and Cementing Fluids
- Chemicals Evaluation and Qualification
- Formation Damage and Stimulation
- Geochemistry
- Petrophysics
- Hydrocarbon Phase Behavior



# Major Challenges

- Specialty lubricants for coiled tubing drilling applications
- High temperature polymers (> 300 deg F)
- Mud losses while drilling and/or cementing
- Waste management
- High density clear fluids
- Stuck pipes
- Stimulation treatments
- Limited filter cake removal systems

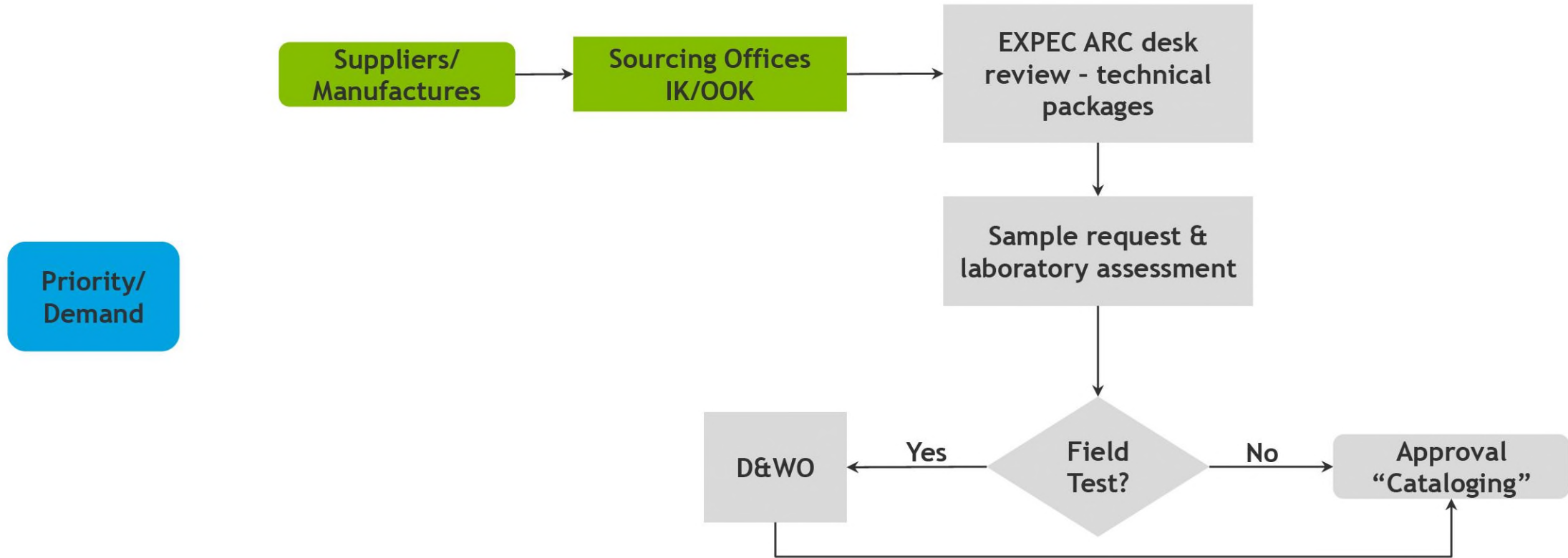


## Chemicals in Demand (00K)

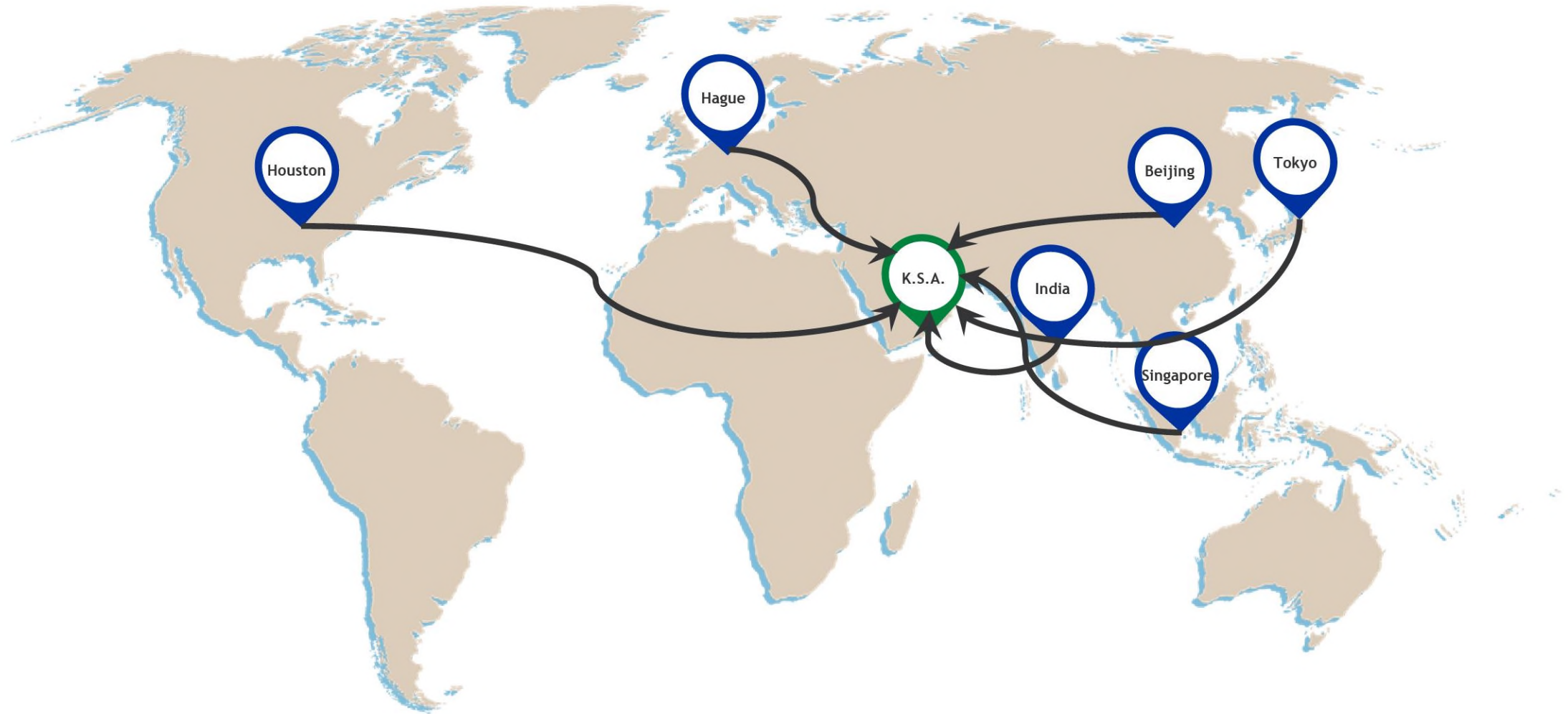
- Powder H<sub>2</sub>S scavengers
- Corrosion inhibitors
- Non-emulsifying surfactants
- Divalent salts
- **Specialty lubricants, non-conventional LCMs**
- OBM thinner
- Xanthan Gum
- Weak organic acids
- Divalent brines viscosity polymers
- Biocides and lime



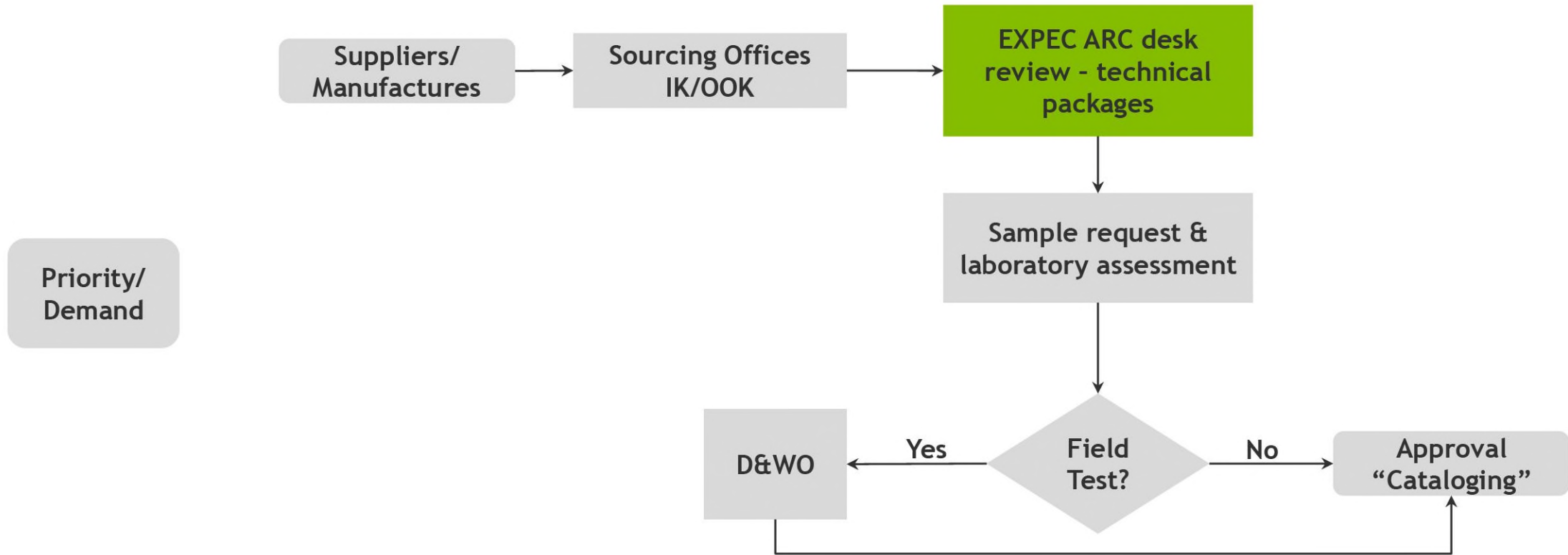
# Qualification Process at a Glance



# Locations / Localization







# Qualification Process at a Glance



# Technical Requirements

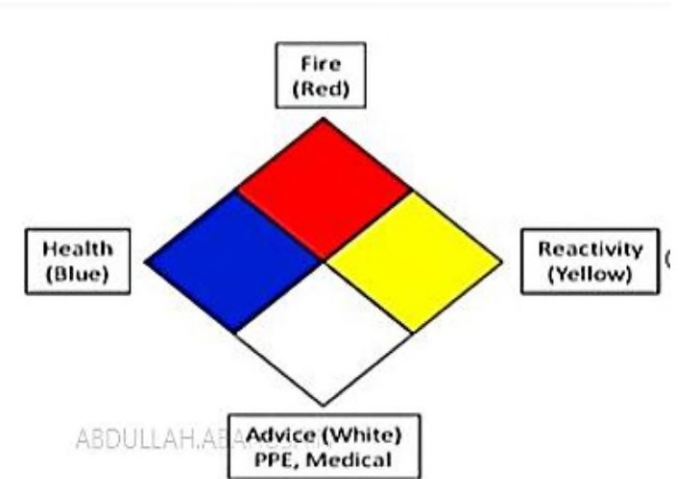
- Product Details
  - PDS / SDS / COO / COA
- Product Storage (Packaging, Handling)
- Shelf Life
- Recipes and Mixing Instructions

Color	Hazard
	Health
	Fire
	Reactivity
	Advice

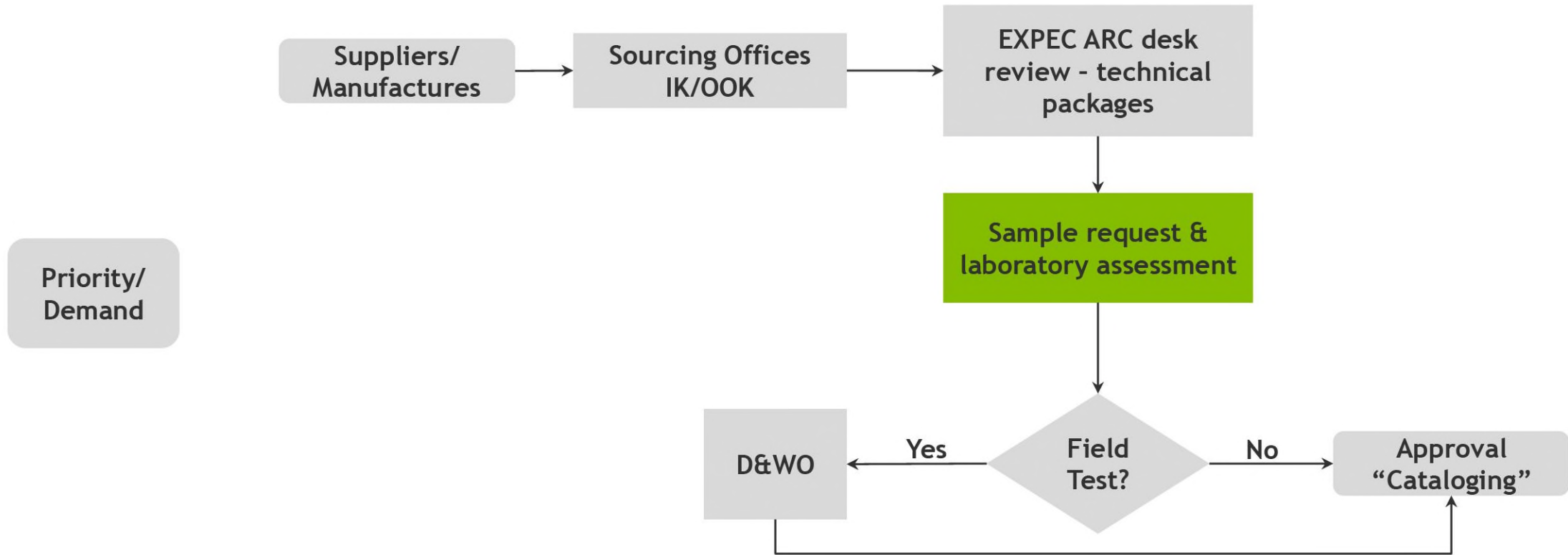
**Numerical Ratings:**

- 4 ..... Extremely Hazardous
- 3 ..... Highly Hazardous
- 2 ..... Moderately Hazardous
- 1 ..... Slightly Hazardous
- 0 ..... Insignificant Hazard

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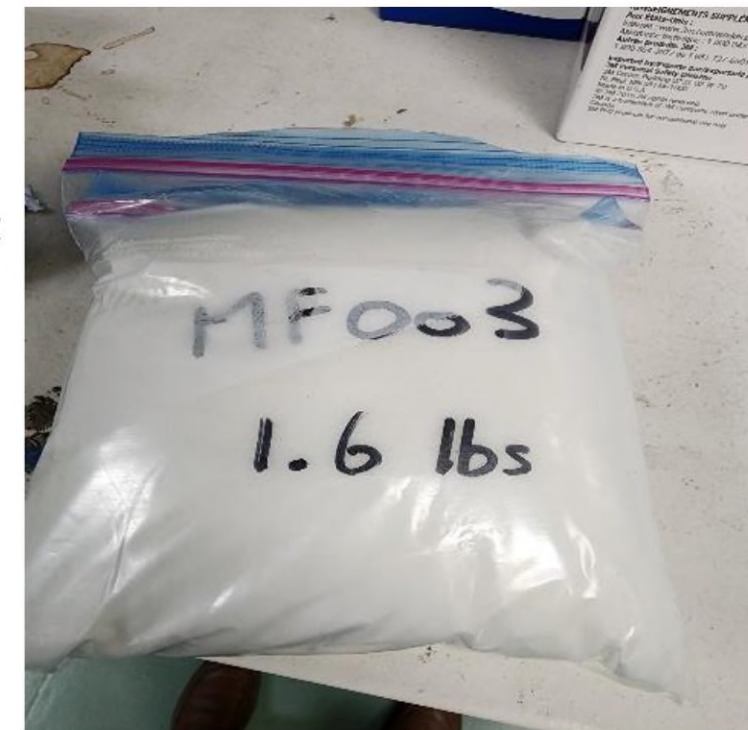


# Qualification Process at a Glance



# Sample Requirements

- Materials must be the same as the commercially available from the MFR, including trade name
- Samples must be factory sealed and properly labelled
- Samples should be shipped by OOK sourcing offices directly to EXPEC ARC
- Quantity and marking of samples for laboratory testing should be as follows:
  - For powdered and/or flake materials (polymers, starch, etc.): **3 x 1 kg**
  - For liquid material: **3 x 1 ltr**
  - For bulk material (Barite, Bentonite, LCM, etc.): **3 x 1 kg**
- All samples **MUST** be packaged in a plastic container marked “FRAGILE”
- All sample containers **MUST** be marked, as follows:
  - Full chemical trade name
  - Brief chemical description, i.e., Potato Starch, Lubricant, Xanthan Gum, etc.
  - Source of chemical, i.e., MFR’s name and full address
  - Date of production and expiration
  - Chemical lot or batch number
  - Safety hazard “Diamond” label/sticker or HAZCOM
- EXPEC ARC will not accept any sample received without proper labelling and/or SDS.



Example of improper sample preparation

# Qualification Process at a Glance

