

# **Product Development Life Cycle of a Drilling Fluid Additive**

***Ensuring Product Quality through Scale-up***

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# Outline

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- Sourcing
- Technology Transfer & Scale-up
- Product Quality
- QA/QC Specifications
- Compliance



# Sourcing

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- Selection factors
  - Industry Experience
  - Business Alignment
  - Manufacturing Capabilities
  - Location
  - Price
  - Service / Support
  - Quality



# Sourcing Evaluation

## Evaluation approach

- Questionnaires
- Site Visits

- Manufacturing Controls
- Quality Control Process
- Lab Testing Capabilities
- Certificate of Analysis
- Retain Management
- Quality Management System

Selection  
Factors



Evaluation  
Approach

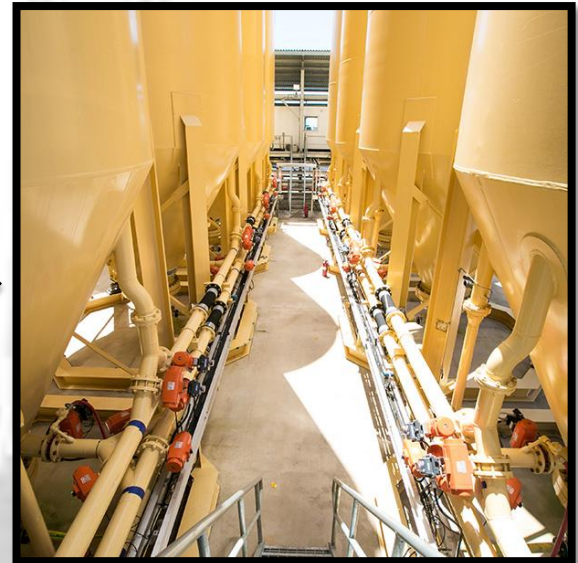


Supplier  
Selection



# Technology Transfer & Scale-up

- Lab-scale Instructions & Specifications
- Collaboration
- Manufacturer Pilot Testing



# Manufacturing Consistency

- Quality Control Plan defines critical elements to monitor during the manufacturing process
  - Quality Control requirements identified may include manufacturing environment needed to make product (ex: temperature, mix time, reaction time)
  - Quality Characteristics to be measured (ex: specifications)
  - Inspection points (ex: in-coming material inspection, WIP testing)



# “Quality” has many meanings...

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**QA** “part of quality management focused on providing confidence that quality requirements will be fulfilled.”

**QC** “part of quality management focused on fulfilling quality requirements.”

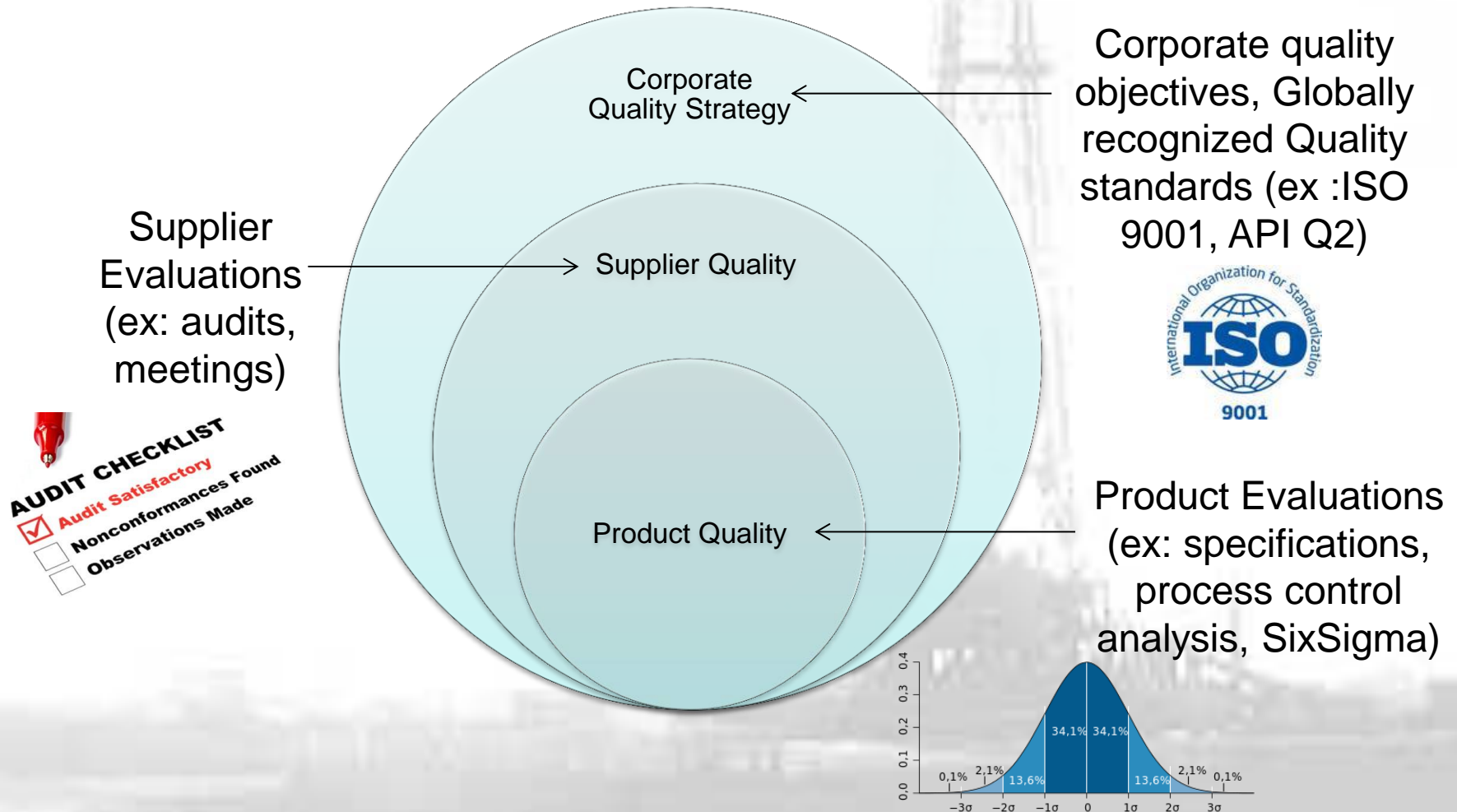
Scopes of Quality within an organization:

- Service Quality
- Supplier Quality
- Product Quality



# Quality Assurance Metrics

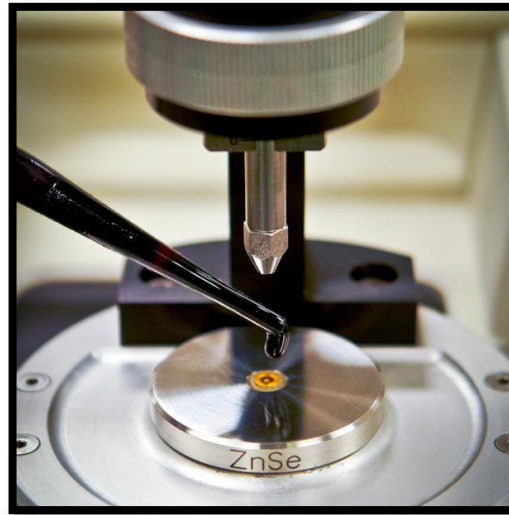
Service company defines and develops best metrics to monitor quality of product and service





# QA/QC Specifications

- Product specifications
  - Chemical/Physical Properties
  - Performance Testing
- Quality control is the responsibility of the manufacturer



# Why is Product Quality important?

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- Benefits:
  - Increase customer satisfaction
  - Competitive product
  - Increase market share
  - Reduce risk
  - Eliminate waste
  - Increase efficiency of operations



# Compliance

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## Globally Harmonized System:

- SDS
  - Comprehensive information about a chemical, typical properties
  - Communication of hazards and proper handling
- Packaging labels
  - Product Name/ID
  - Supplier Info
  - Hazard information



# Team Effort for Effective Deployment

