



# Covestro

## PHA revalidation - how it can be done efficiently

Dr. Frank Diehl

December 2019

# Covestro – leading in the world of plastics



- €14.6 bn in sales
- 16,800 employees<sup>1</sup>
- Listed on the DAX stock exchange



## Large portfolio

- Products and solutions for many industries



## Global player

- 30 sites worldwide
- Close to markets, customers and suppliers



## Highly innovative

- 1,100 employees in research and development
- 80 years of ideas and inventions



# Plant & Process Safety (PPS) @ Covestro

Efficiency is one of seven focus areas

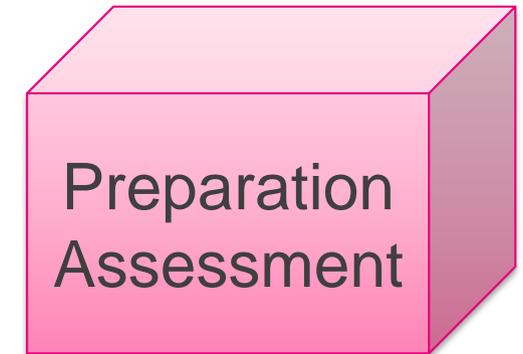
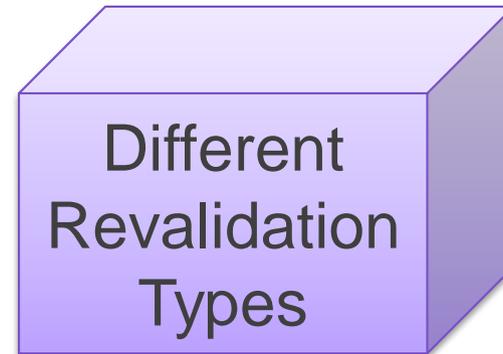
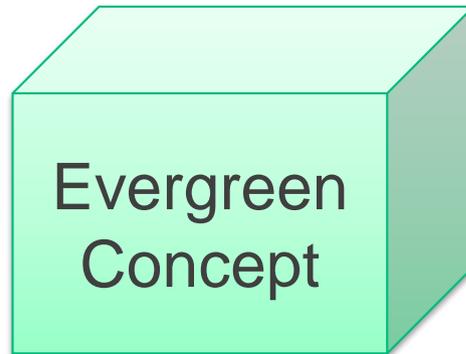
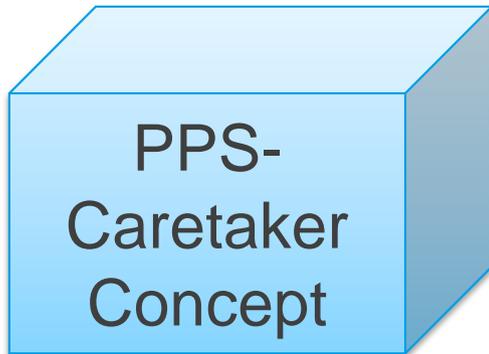


- 1 Dialogic Governance
- 2 Synergic group of Experts
- 3 Competency
- 4 Standardization
- 5 Efficiency**
- 6 Learning from Incidents
- 7 Resource Planning

# Four pillars for efficient revalidation of safety concepts

**Covestro developed an approach to combine high quality with efficient use of resources:**

- A revalidation process can be very time consuming and may not use resources efficiently
- By using all elements of this approach Covestro will be able to conduct the revalidation process in an efficient and time-optimized manner
- Instead of a “one size fits all”- a “tailor made”-approach with four different revalidation types

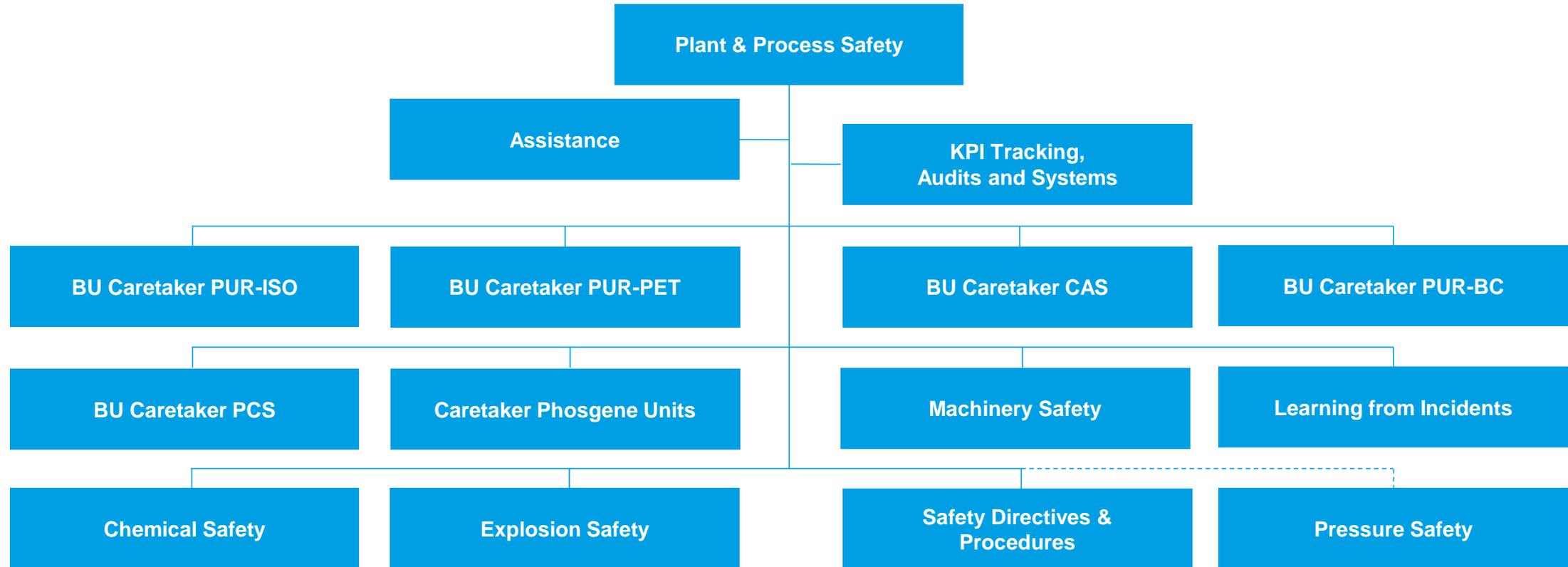


# Establish PPS Caretaker Concept

- Install global PPS Community
- Install PPS caretaker (including HAZOP Lead) for each plant
- Involve PPS caretaker in all PPS issues (e.g. changes, incidents, near misses)
- Provide standard solutions and typicals for PPS

**→ Ensure resources & knowledge**

# Global HSEQ-PPS Team



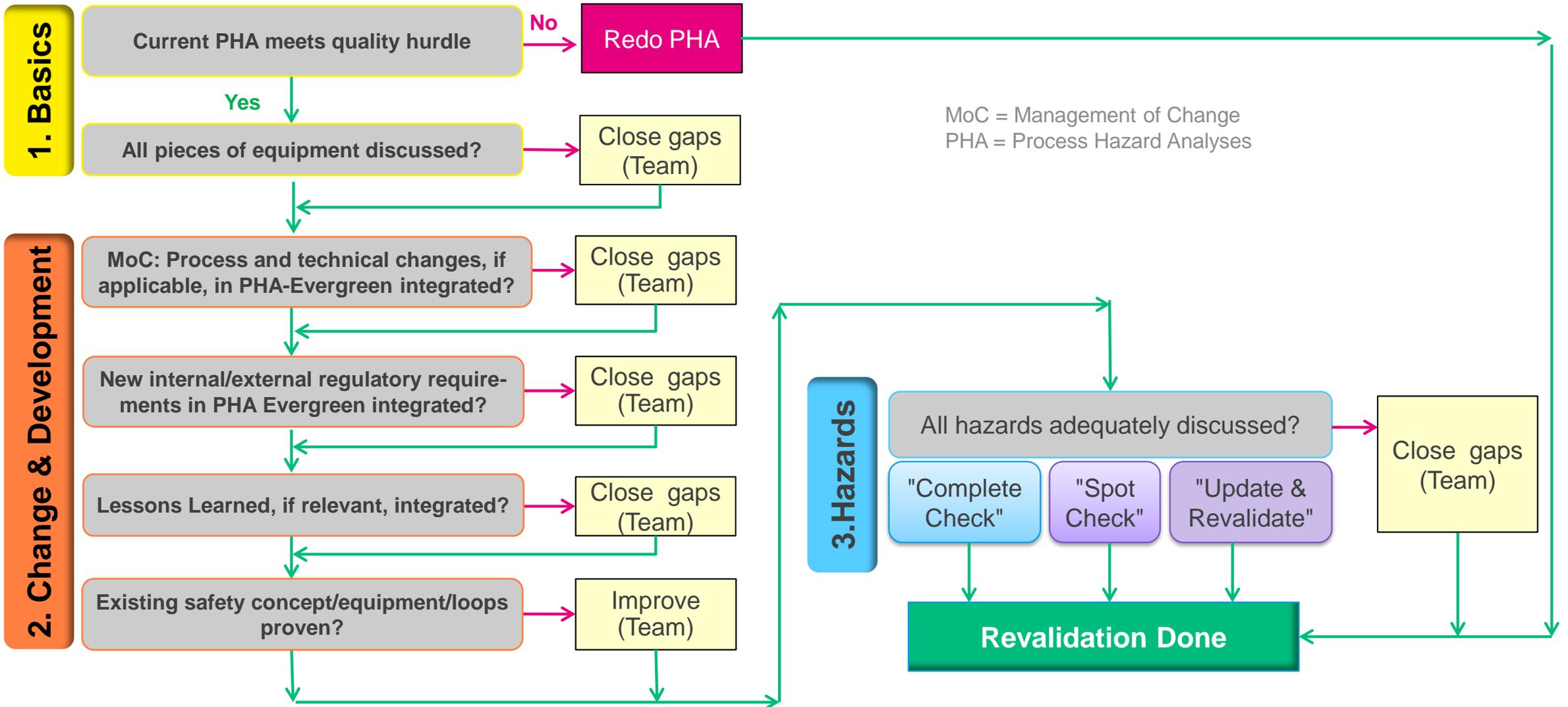
# Establish Evergreen Concept

- For **all** changes the plant manager evaluates whether the direct involvement of the dedicated PPS Practitioner is needed
- If the change impacts the safety concept, the modification shall be submitted to the PPS Practitioner for participation at the risk assessment
- Keep the safety study updated ("Evergreen") is a necessary prerequisite for reducing resources and time of upcoming safety review revalidations
- Therefore, changes to the safety concept resulting from Management of Change (MoCs) shall preferably be documented directly and most efficiently within the master safety documentation

→ **Guarantee high-quality & "up-to-date" Safety Concept documentation**

→ **Minimize workload during revalidation phase**

# Revalidation Approach used by Covestro



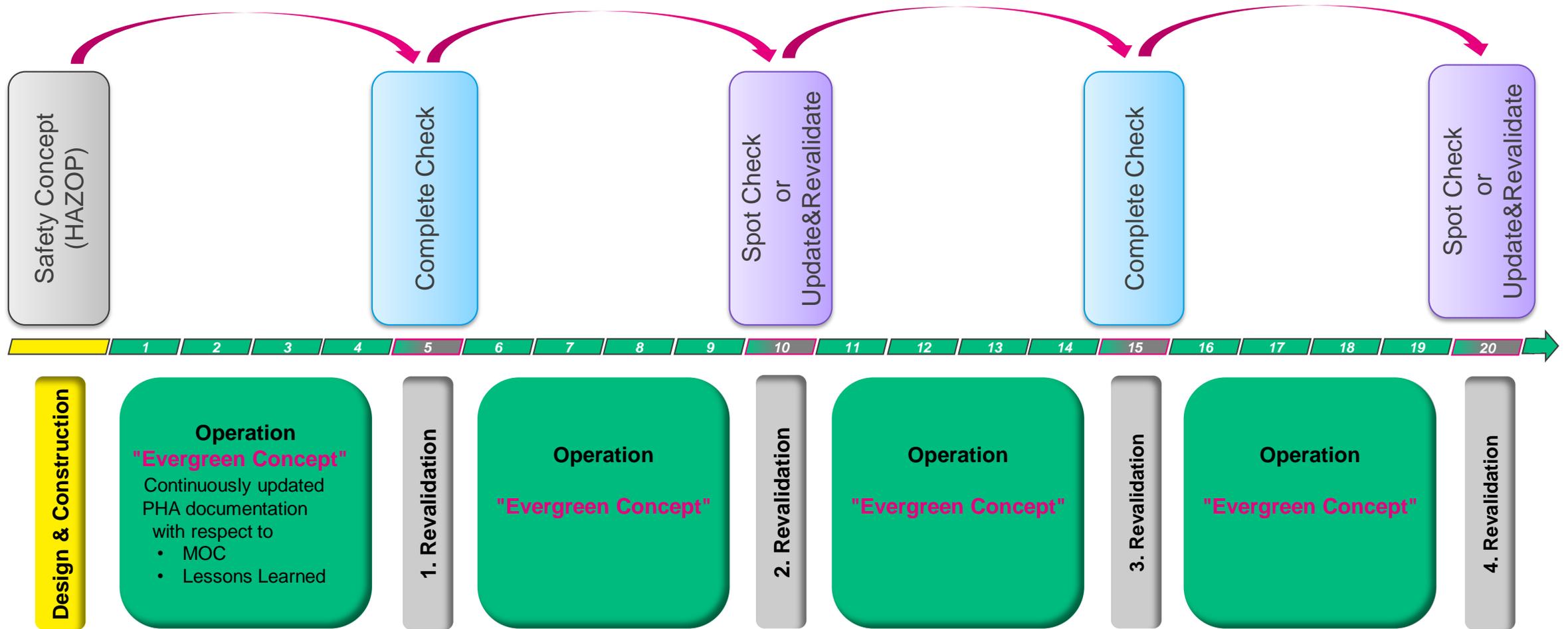
# Different Revalidation Types

Depending on the quality and completeness of the existing PHA documentation, the revalidation scope can vary between:

- "PHA redo" *(complete new HAZOP is done)*
- "PHA complete check" *(hazard discussions of all equipment are checked by the whole team)*
- "PHA update & Revalidate" *(HAZOP is "pre-checked" and – if needed updated – by involved disciplines; results are discussed by the whole team)*
- "PHA spot check" *(hazard discussions of e.g. 10 % of equipment are checked by the whole team)*

**→ Focus team on essentials by systematic scope definition**

# Cycle of Different Revalidation Types



# Preparation Assessment

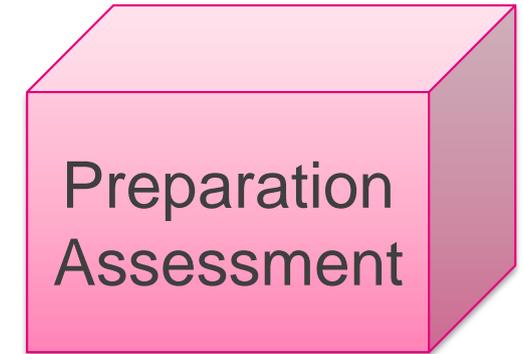
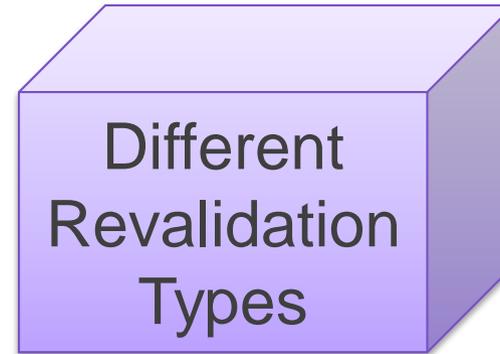
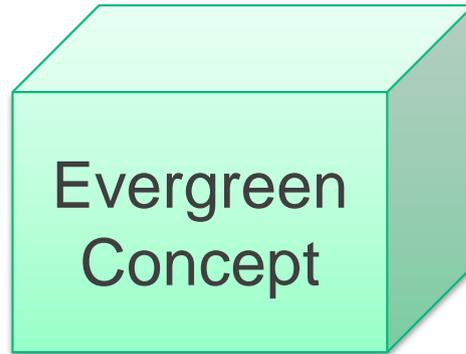
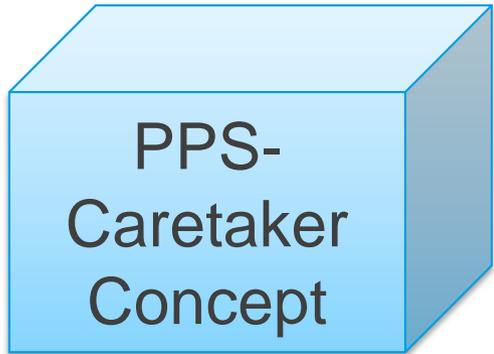
## „Run the Revalidation as a Project“

The preparation assessment covers two tasks:

1. Determination of the PHA-Revalidation type
2. Screening of all relevant Process Safety Information (e.g. current P&ID, equipment data, SOP, pressure safety data, functional safety data) to find tasks that should be finished **before** the start of the PHA-Revalidation
  - questionnaire as a tool
  - expertise and experience have to be involved
  - additional disciplines and/or specialist departments (e.g. process, chemical safety, functional safety, explosion safety) may be needed

**→ Focus team on essentials by systematic scope definition and preparation**

# Summary



1. Plant management has a clearly defined PPS caretaker who is involved in all PPS matters, e.g. MOC's, incident investigations and is providing standard solutions and typicals.
2. Evergreen Concept guarantees an all time up-to-date safety concept documentation which is a perfect starting point for a new revalidation.
3. Depending on quality and completeness of the existing PHA documentation different Revalidation Types are possible: „redo“, „complete check“, „spot check“, „update & revalidate“.
4. Mandatory Preparation Assessment prior to start of revalidation focuses on the essentials by systematic scope definition and preparation.



Thank you



# Forward-looking statements

This presentation may contain forward-looking statements based on current assumptions and forecasts made by Covestro AG.

Various known and unknown risks, uncertainties and other factors could lead to material differences between the actual future results, financial situation, development or performance of the company and the estimates given here. These factors include those discussed in Covestro's public reports, which are available on the Covestro website at [www.covestro.com](http://www.covestro.com).

The company assumes no liability whatsoever to update these forward-looking statements or to adjust them to future events or developments.