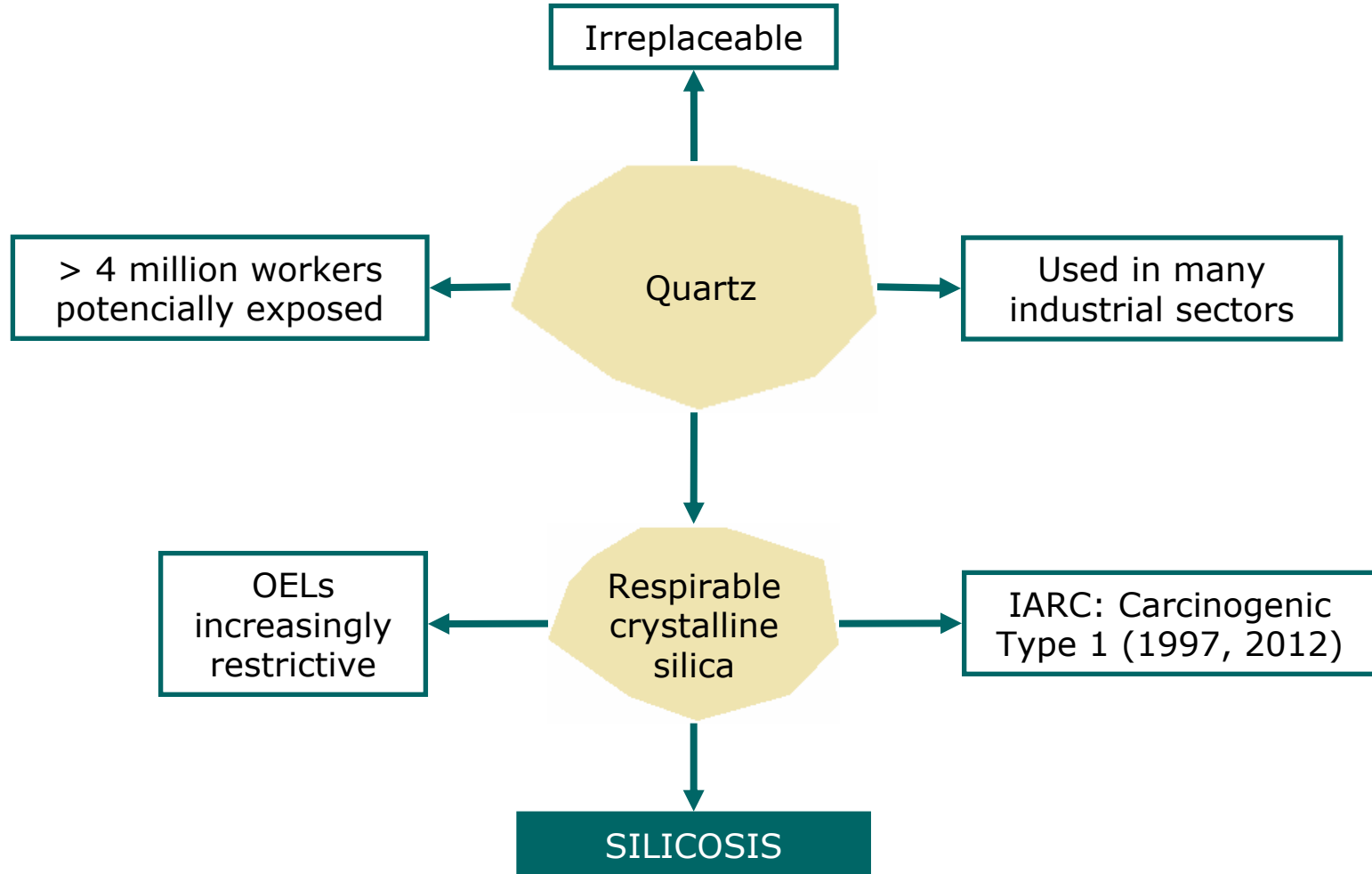




# Production of quartz powders with reduced crystalline silica toxicity

# Approach to the problem

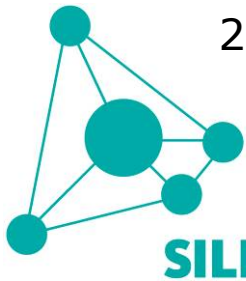




2005 - 2008

Study of the presence and toxicity of RCS in the European ceramic industry.

Some substances can affect the surface reactivity of RCS and modify its toxicity.



2011 - 2014

Implementation of coating technologies of respirable crystalline silica (RCS) in wet ceramic processes.



**NEXT STEP:**

Application of the coating technology of SILICOAT during the quartz processing.

# SILIFE Project



**Title: Production of quartz powders with reduced crystalline silica toxicity**

**DURATION: September 2015 - September 2019**












**TOTAL BUDGET: 1,666,059 €**

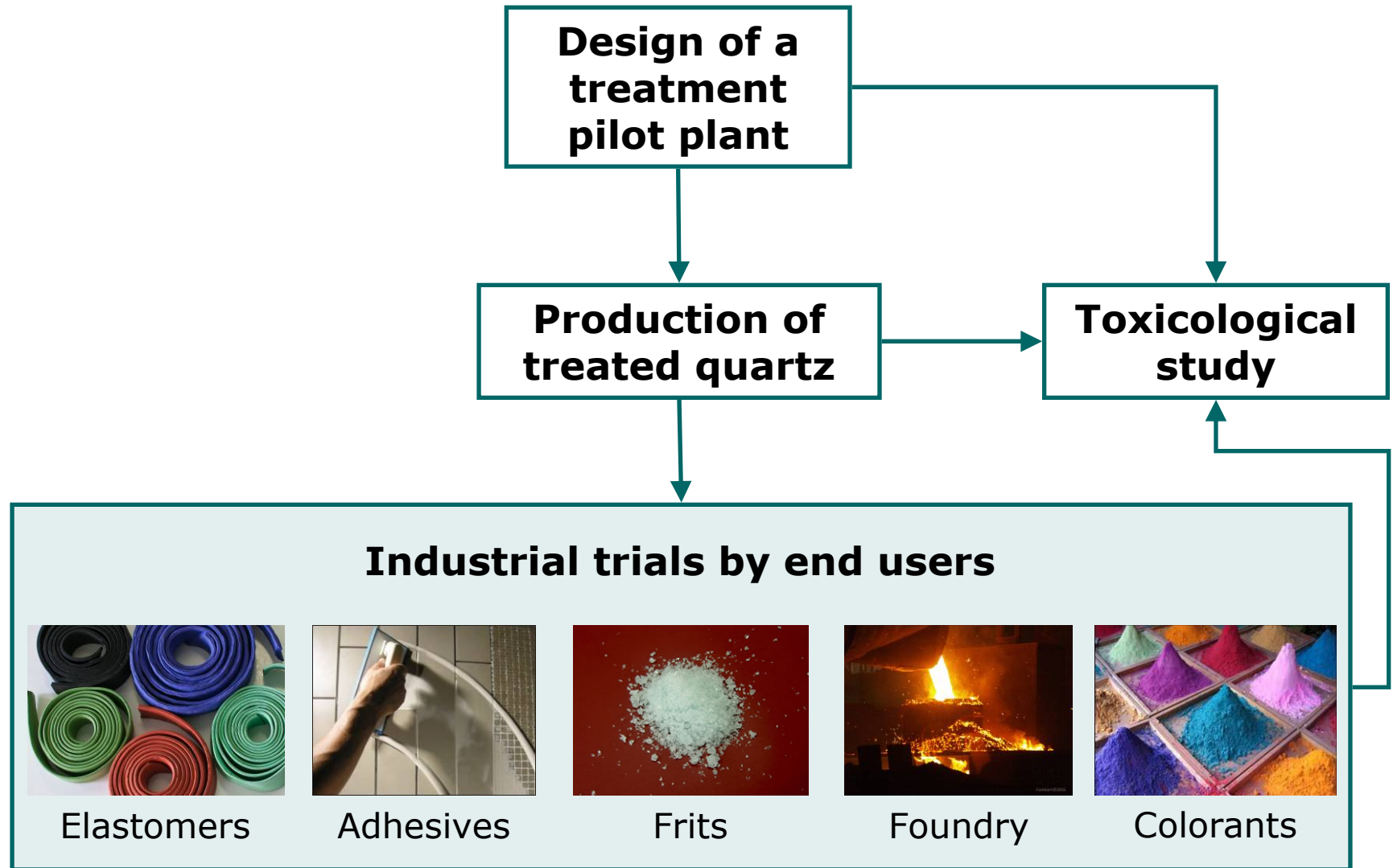
**LOCATION: Germany, Italy and Spain**



## Objective

Produce commercial treated quartz powder with very low or null toxicity

Technological beneficiaries	Industrial beneficiaries
<p style="text-align: center;"><b>RTD Performers</b></p> <p> IUTC – Universitat Jaume I <b>(Coordinator)</b></p> <p> Centro Ceramico di Bologna</p> <p> ITEM – Fraunhofer</p> <p style="text-align: center;"><b>Technological Plattform</b></p> <p> PESI (Spanish Technology Plattform on Industrial Safety)</p>	<p style="text-align: center;"><b>Raw material suppliers</b></p> <p> ABCR Laboratorios S.L.</p> <p> Bulk Cargo Logistics S.A.</p> <hr/> <p style="text-align: center;"><b>End users</b></p> <p> Elastomers Union S.r.l.</p> <p> Esmalglass S.A.U.</p> <p> Fundiciones Fumbarri-Durango S.A.</p> <p> Itaca S.A.U.</p> <p> Mapei S.P.A.</p>



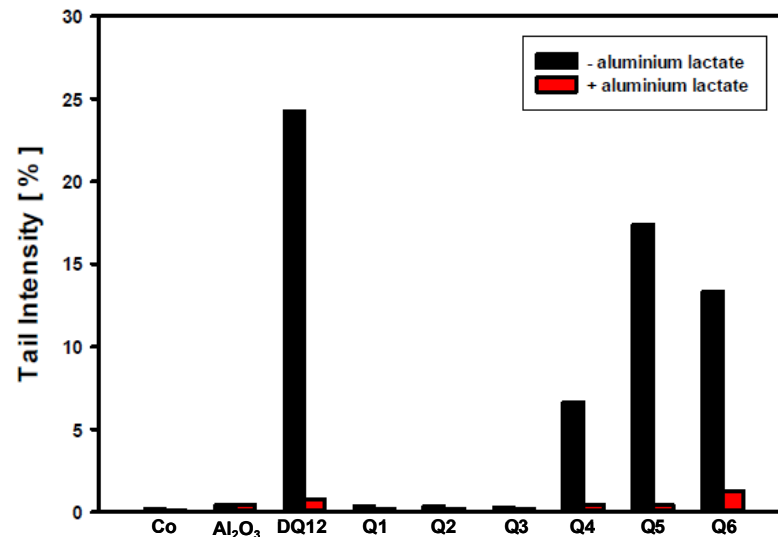
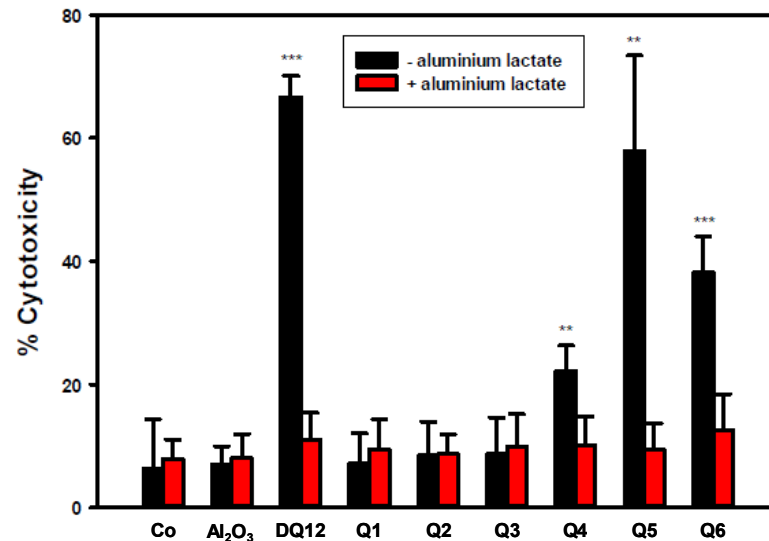
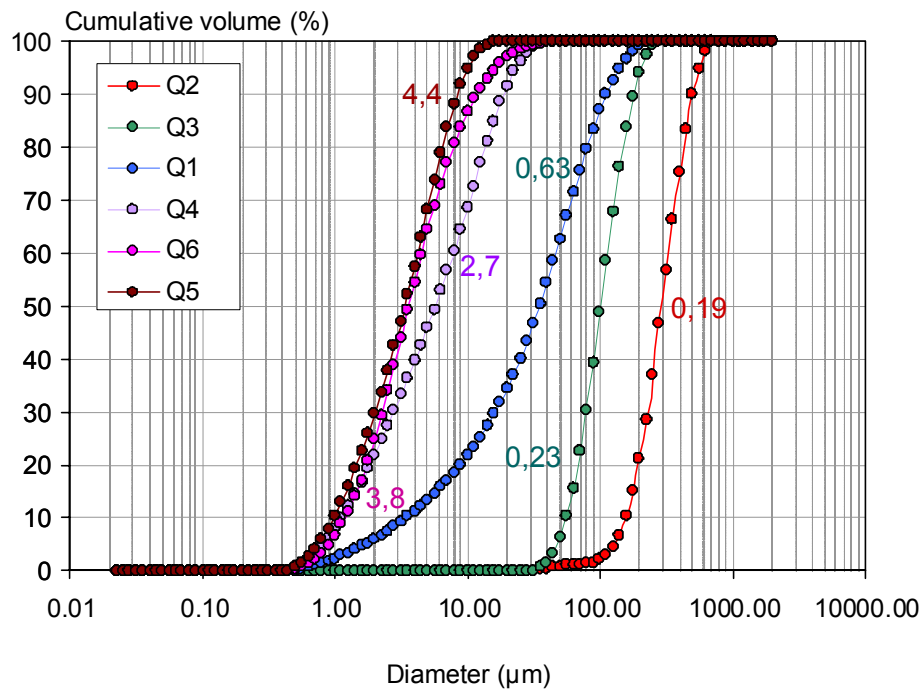
# Expected results



- At least 75% of reduction of quartz toxicity
- Low cost of treatment:  $\sim 0,025$  €/kg of quartz
- Substitution of 10 tons of raw quartz by treated quartz during the project life in the end-user plants.



# Provisional results



# Provisional results



<b>Sample/Treatment</b>	<b>S<sub>e</sub> [m<sup>2</sup>/g]</b>	<b>Cumulative volume &lt; 4 μm [%]</b>	<b>Cytotoxicity [%]</b>	<b>Genotoxicity [%]</b>
<b>DQ12</b>	<b>3.30</b>	<b>-</b>	<b>56</b>	<b>24</b>
<b>Q5</b>	<b>4.40</b>	<b>57.4</b>	<b>48</b>	<b>18</b>
<b>Q6</b>	<b>3.80</b>	<b>54.5</b>	<b>26</b>	<b>12</b>
<b>Q4</b>	<b>2.70</b>	<b>39.6</b>	<b>12</b>	<b>6</b>
<b>Q1</b>	<b>0.63</b>	<b>11.3</b>	<b>&lt;3</b>	<b>&lt;0.5</b>
<b>Q3</b>	<b>0.23</b>	<b>0.0</b>	<b>&lt;3</b>	<b>&lt;0.5</b>
<b>Q2</b>	<b>0.19</b>	<b>0.0</b>	<b>&lt;3</b>	<b>&lt;0.5</b>



# Thanks for your attention

[mjesus@itc.uji.es](mailto:mjesus@itc.uji.es)



*This project has been funded by the LIFE Programm of the European Commision*