

Job Title:

**TRA – Basis of Design**

Company:

**MSD Rathdrum  
(Formerly Schering  
Plough Avondale)**

Location:

**Rathdrum, Ireland**

Duration:

**6 Months**

Objectives:

**Design Certainty**

**Budget Certainty**

### Get In Touch

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Schering-Plough (Avondale) Company (SP(A)C) commissioned **Prochem** to complete the Basis of Design (BOD) on the P5 Thrombin Receptor Antagonist (TRA) Scale Up Capacity Expansion project. SP(A)C proposed to carry out the 3 steps of the production of TRA in the existing P5/P5x and P3 buildings.

**Prochem's** scope of services involved the development of a BOD for all modifications required to existing equipment in the P5/P5x and P3 buildings. In general, the modifications on the existing reactors involved the provision of:

- additional feed tanks
- powder transfer systems and
- improvements to aid high volume distillations in both P5 and P5x.

Modifications were also required to Dowtherm systems serving reactors and condensers. In particular, a new XLT (-70°C) Dowtherm J generation and distribution system needed to be installed to serve a cryogenic upgrade to an existing stainless steel reactor.

A new LT (-20°C) Dowtherm chiller was also included in the project scope to provide overall redundancy to the existing capacity, which was operating fully during significant portions of the year. Another significant part of the work involved upgrading of containment systems for wet and dry powder handling in P5/P5x and on a milling machine. These upgrade requirements arose due to the low Occupational Exposure Limit (OEL) of 4 µg/m<sup>3</sup> assigned to two of the processes, which fell into the HHC-4 containment band. Options considered included use of isolators and split butterfly valves.

To achieve a thorough appreciation of the project and its scope, team workshops, involving all disciplines were conducted. These looked at the process steps being manufactured, the process requirements and constraints.

These workshops were followed by an extensive survey of the existing facilities within each of the buildings, a review of the capacities of both the process and utilities and an assessment of the options available to meet the requirements for each of the unit operations involved.

The BOD included GMP reviews, system impact assessments, schedule (including shutdown schedules), updated P&ID's, PFD's, process strategies and calculations, preliminary EHS plan, equipment and instrument lists and datasheets, and controls scope of work. It also included a cost estimate to an accuracy of +/- 10%.

**Prochem** completed the BOD successfully allowing SP(A)C to proceed with a capital investment of €50M. P6 (a new hydrogenation process building specifically for TRA production) was built and each of the recommendations within the BOD for the modifications to buildings P5 / P5x and P3 were adopted.