

## DEVELOPMENT AND GROWTH – PAVING THE WAY FOR “FIVE-IN-FIFTEEN”

TO ENSURE FUTURE GROWTH, CHEMINOVA IS INVESTING THREE-DIGIT MILLIONS EACH YEAR IN DEVELOPMENT AND REGISTRATION OF NEW PRODUCTS. INTRODUCTION AND MARKETING OF MORE NEW PRODUCTS THAN PREVIOUSLY WILL HAPPEN THROUGH INNOVATIVE PROCESS DEVELOPMENT, FORMULATION DEVELOPMENT AND REGISTRATION.

The development of new products has a high priority, and in today's competitive environment time is often of the essence. New project management principles have led to more effective projects in Cheminova. The objective is to develop competitive production processes and differentiated formulations. Safety and environmental friendliness are key parameters, and each year Cheminova spends millions of kroner on scientific tests to measure the risk to people and the environment and the effectiveness of the products.

### 220 employees in Development & Registration

Development takes place in development laboratories and test facilities at Cheminova's head office in Denmark and at Cheminova India. Other development projects are undertaken jointly with subsidiaries and external companies and research centres. In recent years, Cheminova has stepped up its development activities. A total of 220 of the group's some 2,000 employees are engaged in innovative process development, formulation development and registration.

» Identification is one of Cheminova's core competences. In the pre-project phase we consider ideas for new projects and assess the projects' potential from a commercial and technical point of view. It is important that the idea is viable in the long term as it may take many, many years before an idea is translated into sales in a market. The market for crop protection products is very dynamic, and identifying the right ideas and projects is crucial to the business strategy about growth through new products.

Henrik Schlosser  
*Identification & Project Development Manager*

Development & Registration is organised as follows:

- AI development (synthesis, process and pilot development).
- Formulation development.
- Registration.
- Analysis development.

**AI development** – The in-house development of active ingredients (synthesis) has been the backbone of growth in Cheminova's production activities. Cheminova designs competitive manufacturing processes based on modern chemistry, both in terms of new active ingredients and existing production. The development of production technologies is one of Cheminova's core competences. Pilot development comprises test activities and upscaling of processes. Small-scale productions are also undertaken, typically of new products in the introductory phase.



» Established products are regularly evaluated by the authorities, which requires considerable investments in new data and registration support. For example, EU member states have voted in favour of having malathion back on the market in Europe. Cheminova will now be able to re-introduce malathion in the patented water-based formulation. It will be introduced gradually in the coming years as the individual countries reregister the product.

See news article: “Malathion is back in Europe” on [www.cheminova.com](http://www.cheminova.com).

Inge Margrethe Jensen  
*Department Manager, Registration*

**Development of formulations** – Develops robust recipes for new and existing active ingredients based on modern formulation technology, and the department's staff serves the sales and production departments in respect of existing products. Focus is on products containing water or plant oils rather than the usual organic solvents. This is increasingly being reflected in Cheminova's product programme, which comprises a wide variety of liquid and solid formulation types.

**Registration** – Product registration in the individual countries is a prerequisite for sales. Documentation requirements are strict as regards product properties and involve extensive health and safety tests. Registration also obtains, maintains and expands registrations that represent government approval.

**Analysis development** – New processes and new products require the development of new analysis methods, for example to ensure good-quality finished products. The analysis methods are crucial to the development process, but also for later use during operating control, and form the basis for future operating analysis methods.

#### From idea to market

Before a new product is developed and registered, we need to identify and assess its market potential. This takes place in the individual markets where Cheminova's employees have in-depth knowledge of the needs of farmers, and in Global Portfolio Management where the global market for crop protection products is monitored and analysed.

» Cheminova's business strategy is primarily based on organic growth generated by the development of new products. The Business Plan "Five-in-Fifteen" is the lodestar for our work on identifying new ideas for development projects which will strengthen our total global product programme.

See article on Global Portfolio Management at [www.auriga-industries.com](http://www.auriga-industries.com).

Rico T. Christensen  
Vice President, Portfolio Management



#### GLYPHOSATE-RESISTANCE HAS NOW BEEN OBSERVED IN SEVERAL WEED VARIETIES IN THE USA, WHICH MAY BRING NEW OPPORTUNITIES FOR CHEMINOVA

Glyphosate still has considerable value for farmers, and demand for the product will remain high. An important antiglyphosate-resistance tool is using several types of chemistry for controlling weeds. In 2009, we launched two new glyphosate compounds under the names of Dawn® and Rhythm®. We have previously introduced Tackle®.

Sales of compounds allow Cheminova to offer farmers more differentiated products. The new compounds are now central to our sales of crop protection products for key crops such as soya and cotton. We are still developing value-adding technologies for the market. We have many projects on the go – both for imminent launch and with a longer horizon.

See article about glyphosate-resistance at [www.auriga-industries.com](http://www.auriga-industries.com).



» About 10 years ago we introduced a new product every three years. In the Business Plan "Five-in-Fifteen", the strategy has changed so that we now market three new products each year. We appreciate the strict requirements for product chemistry and documentation because they guarantee the highest possible level of consumer protection, and because we enjoy an advantage compared to our competitors thanks to many years of extensive know-how. Our strength lies in the international collaboration between registration specialists in the global organisation.

See article about Registration at [www.auriga-industries.com](http://www.auriga-industries.com).

Diane Allemang  
Vice President, Regulatory Affairs