

# 1-2-3 on Pesticide Packaging: Innovation for Safety

What goes into pesticide packaging? Careful thought about farmer safety and usability, environmental protection and anti-counterfeiting, according to Georg Heitmann, head of Global Packaging Technology, Crop Science Division, at Bayer AG in Monheim, Germany. Like pesticide development, packaging in the crop protection industry is based on continuous innovation. That's mainly to augment safety and performance.



## Q1: Why is innovation in pesticide packaging important?

Innovation in packaging enables safer product use by farmers and protects the environment. For example, safety seals, child-proof and spill-resistant caps and a manufacturer's logo engraved into the bottles and/or caps of products protect against leakage, counterfeiting and getting into the wrong hands. Caps are thermo-formed with a tamper evidence ring that breaks off to indicate an opened bottle.

It takes several million Euro to change a single packaging feature like the grip of a handle, plus several months of testing to meet United Nations' Dangerous Goods Transportation requirements. Then further time is needed to introduce the new feature into the global market; a brand-new package takes about a year. Fortunately, 99 percent of the desired features for safety and performance are already implemented.

## Q2: How do you protect against pesticide counterfeiting?

It's getting harder and harder to stay ahead of criminals so we have to do so with elaborate technology. Examples are incorporating unique overt and covert features, such as a hologram with a company logo or invisible letters that can only be read by retailers with special equipment. Holograms are difficult to falsify and machine readable codes are used to authenticate products. They are read by farmers with a smart phone app to verify product origin. If the code has already been scanned (empty packaging taken by a criminal and refilled), then the farmer will be warned not to use it. Moreover, easy-to-manage containers that are appropriate for farm size discourage decanting products into unlabeled, inappropriate containers, which make counterfeiting easy.



## Q3: What are examples of packaging innovations?

Crop protection products are ergonomically designed for easy handling. For example, anti-splash and anti-glug bottle necks allow air to come in while pouring to prevent splashing. Built-in measuring devices in liquid formulas and measured doses of gels minimize the risk of under- or overuse of pesticides.

Stronger, lighter plastics and clever designs (i.e., plastic ribs or multiple layers in bottle walls) are being used in packaging to lessen waste and cost. Refillable, returnable bulk containers are also used in some markets to cut down on waste and cost as they can last for five years. Generally, single layer containers are suitable for recycling programs to be converted into useful items like pipelines and cable covers.

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