Exploratory study on individual workplace practices face of CMRs risks in farming sectors

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Introduction:

Chemical risks are a priority in Europe and more specifically for the French Government. Farmers are trades and occupations with significant exposed to it in due to the frequently usage of plant-health products (Baldi & al. 2014). This kind of risk factor, also entitled “Carcinogenic, Mutagenic and Reprotoxic” (CMR), have adverse effects on human health by increasing the risk of cancer (Kauppinen & Toikkanen, 1998; Baldi & al. 2003). Consequently, the prevention measures to be implemented are a major issue for the health of the workers and, more widely, for the public health.

Ergotoxicology approach is a comprehensive study in order to inquire precisely the actual exposure situations at workplace (Mohammed-Brahim, 2006). Mohammed-Brahim & Garrigou (2009) have qualified the preventive measure as “screens model” (Hollnagel, 2006) founded on standards (occupational exposure limit values), equipment, and regulation. Each of this screens have limits to combine both occupational health protection and efficiency of the workers. Actually, the scientific knowledge on the real use of plant-health products are not sufficient (Bourrée & al. 2014) and the “screens model” does not take into account the workers’ social representations dealing with toxic chemicals.

Farmers are faced in one hand on multiples sources of information related risks’ plant-health products and in the other hand with several internal or external constraints. They have to take decisions between this determinants in order to develop an adequate representation CMRs’ risks action-oriented. It is important to bear in mind the long-terms effects on health of this substance and the short-term benefits on agricultural production (Mohammed-Brahim & Garrigou, 2009).

In this context, an exploratory study was undertaken to identify the determinants of the real conducts at workplace situations in one hand regarding the application of the prevention requirements and the actual safety behaviors, and in the other hand on the factors that facilitate or constrain it both at individual and working conditions. This temporal specificity may influence safety behavior and encourage an excessive risk-taking, making it more acceptable in the daily work.

Methodology:

The survey is conducted with five French farmers (only one female) who are working in large-scale mechanized farms (> 80 Ha) with a frequent use of pesticides. Each of them are coming from a farm family and working from school days. Two of them are in early stage in their careers and the others more experienced.

<table>
<thead>
<tr>
<th>Farmer</th>
<th>N1</th>
<th>N2</th>
<th>N3</th>
<th>N4</th>
<th>N5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>Male</td>
<td>Male</td>
<td>Female</td>
<td>Male</td>
<td>Male</td>
</tr>
<tr>
<td>Age</td>
<td>25</td>
<td>26</td>
<td>48</td>
<td>52</td>
<td>55</td>
</tr>
<tr>
<td>Total area treated with pesticide (in hectares/year)</td>
<td>500</td>
<td>625</td>
<td>220</td>
<td>300</td>
<td>400</td>
</tr>
</tbody>
</table>

Table 1: Characteristics of the study population
Semi-structured interviews are conducted with each of the farmers on different topics as the usage of health-plant products in the farming work, the knowledge on preventive measures or the comply behavior to prescription... The data collected is processed by using thematic content analysis in order to identify patterns and themes in responses.

Parallel, visual observations are made during health-plant products treatment (3 times for each farmer during 2 hours). The selected tasks are the phase of preparation, the application of the pesticide and of the equipment; they're chosen in due of the different exposures situation to the chemical risk related handling, spraying and direct contacting. To systematize the observations made, a classroom checklist was used to record information on:

- The task realized (preparatory, application, cleaning),
- The high-risk contamination movement,
- The safety acts,
- The Personal Protective Equipment (PPE) used.

A quantitative processing is applied to count and to calculate the incidence of the exposed activity at the workplace.

Results:

The preparation phase is the one that was most associated with security behavior during interviews by every farmers. The practices are more homogeneous, except for one of them. The safety behaviors identified during the preparation phase are mainly in connection with the use of PPE, which denotes a search of protection, but the use is not adequate and is the source of many indirect contact with the spray solution or with the pure products.

Regarding “spraying task”, none of the operators says wearing PPE. The only existing protection is the cabin, as collective protection equipment. Every operators think the sealing of the cabin is determining the level of exposure to spray mist.

The last phase of health-product treatment is cleaning equipment which is done in two steps: cleaning the inside of the sprayer with spray rinsing liquid on the treated plot and in a second step, the external cleaning of equipment performed on-site or in the farm. All the farmers are saying flushing the rest of pesticides when they are on the plot.

Exposure to pesticides during this phase was again marked by the type of sprayer used: while in the automotive rinse is started is done from inside the cab, with conventional spray is needed to get off the machine to operate it. During observations, no particular safety behavior were identified during this phase.

The farmers developed security behavior as indicate the quest for protection but the use made of the recommendations may inadequate. This is seen especially through the use of PPE, which are not efficiency in due of the repeated use of single used equipment, the lack of maintenance or the non-observance of rules in use.

Despite this limited follow-up recommendations, operators are not passive towards risk and developing initiatives for their own protection and for other too. As example, this may pay attention to the people around them to avoid traveling to breathe spray mist, eliminate some treatment when possible, or treat night to avoid disturbing the neighborhood.

Discussion:

Factors constraining the safety behavior of farmers in the application of pesticides task are many, and those presented here certainly do not represent an exhaustive list. Risk perception is marked by
contradiction and uncertainty, the ambivalence between danger and safety. The perception of the potential consequences of a health exhibition is very limited and unclear for all operators. Thus, despite a representation of certain products such as toxic substances, these become much less toxic when it concern their own business. Also, the representation of a health risk is correlated with the color, odor products and also to direct exposure to these substances. Finally, the risk prevention system is not questioned; it’s seen as effective by following the recommendations as a guarantee of safety.

Bibliographic references:


