

EVOLUTION OF PERSONAL PROTECTIVE EQUIPMENTS IN BRAZIL

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With the first applications of pesticides in Brazil, reported in the 40's, began to concern for worker safety and the use of PPE in Agriculture. This time, the EPI were adapted from the industry, made with coarse, heavy and waterproof materials, which in addition to providing low comfort and safety, hindered operations. However, in 1977, Federal Law 6514, mandating the provision and maintenance of PPE and specifies that they can only be exposed to sale or used together with the Certificate of Approval (CA) of the Ministry of Labor. Since then begins a process of mandating the use of PPE's not appropriate that greatly contributed to the rejection of the use frequently observed in farm workers. Are legacies of this era, for example, the use of layers of impermeable material, causing problems such as dehydration in workers. In 1989 the problem is compounded by the Federal Law 7802, also known as the Pesticides Law, with the obligation that is recorded on the label of the pesticide protective equipment (PPE) to be used. Since then the PPE are to be recommended only by toxicological class of product, ignoring completely that the risk is a function of toxicity and exposure, and that the latter can change significantly depending on the method of application employed. They are also legacies of this time the famous tables recommendation of PPE according to toxicological class, even spelled the back of most agronomic prescriptions. Only in 1990 begins to concern the development of EPI's appropriate for work in agriculture, by some technical of FUNDACENTRO, organ of Ministry of Labor, born around the concept of the use of cotton garments produced treated with repellent, until now widely used for making clothing for pesticide application. During this time therefore the recommendation of PPE was made indiscriminately, as the only form of security, forgetting that it only reduces the likelihood of accidents, which may represent a considerable burden of discomfort, particularly heat. Moreover, until then, despite the perception of risk is influenced by cultural, social, economic and psychological care, no concern with training was observed. Only in 2005 with the publication of Regulatory Norm (NR) 31, can you observe the law's concern with training and the provision of PPE and clothing appropriate to the risks, which do not provide harmful thermal discomfort to the worker.

Against this background, several issues were raised which have yet to be solved to improve safety with pesticides. One is that, until now, lack of standards for the sector of protective clothing causes in Brazil, the CA is issued only by submitting a Technical Responsibility Certificate from the manufacturer, where it is responsible for the quality of protective equipment provided, without, however, be no actual evidence on the effectiveness of even providing security to the worker. This fact allows the worker is in accordance with the law, wearing a dress that has the CA for handling of pesticides, which, however, gives little or no protection against the risk he is exposed. Another problem that can be cited is that in that despite the importance of work and its uniqueness, the work of development of protective clothing made of cotton treated with repellent based on the standards AATCC 22-1989 and AATCC 118 -- 1992, of the American Association of Textile Chemists and Colorists, who evaluate repellency only and have no support in the literature as recognized methods for evaluating materials used in protective equipment for pesticide application. Nevertheless, such methods have been used so far for this purpose.

Fortunately, various initiatives have been undertaken to improve the situation. The first that can be cited is the study of quality standards that may apply to protective clothing for chemical risks. In this sense, highlight the combined efforts of manufacturers and users of PPE with research institutions and government since 2004, with the Study Commission CE-32: 006.03, of the CB-32 - Brazilian Committee on Personal Protective Equipment of the Brazilian Association of Technical Standardization (ABNT/CB-32), in order to develop standards for certifying the quality of equipment available to the farmer. This led to the Brazilian proposal first standard for protective clothing, delivered in July 2008 to ABNT to be placed under public consultation. This proposal, based on ISO 16602:2007, innovates in that it proposes standards not only for raw materials and also for the finished product, where aspects of construction such as cutting and sewing are analyzed. Depending on the results obtained, the raw material or finished product receives a rating according to the degree of security provided. In addition, we seek to end an old controversy in the area of protective clothing for chemical hazards is the maximum number of washes that the protective clothing may be brought. Under the proposal, the raw materials should be tested after 5 cycles of washing with 3 different methods that differ by the level of aggressiveness to the tissue, described in ISO 6330, and shall be considered appropriate to the number of washes of the last cycle in

which it has achieved with all the quality standards proposed. Thus, the clothes should express its useful life by type of wash used in decontamination. As you can see, once approved, the proposed standard offers a promising tool for both quality manufacturers in the development of new clothes, and professionals from the security area, which may base their decisions on clear criteria and standardized.

A second area which is also being worked on is to improve the quality of the material used in the manufacture of protective clothing for chemical risks. The objective of this work is to develop new materials suitable for protection of workers' health, improve existing equipment and get the certification of these materials. The development of such materials is guided by important vision: the agricultural sector is concerned only with the development of standards, when they are established, the materials and equipment now in existence may not be able to meet them on integrity, being prevented obtain the renewal of the CA. Thus, there may still remain naked for the protection. One of these actions, who was born in 2006 in order to accelerate the development work carried out by Engineering and Automation Centre of Agronomic Institute (CEA/IAC), is the IAC Quality Program of Protection Equipment in Agriculture (QUEPIA). Within this program, researchers at CEA / IAC, with the support of the participating companies and state agencies financing research, have been working on improving the material used in these garments. Tests with different combinations of fabrics, repellent treatments, washing systems and determining the most extensive exposure of each material are being made and significant results have been obtained. The QUEPIA going to be a voluntary system of certification, where the company, along with the necessary initial analysis of their equipment to achieve this certification, provides the CEA / IAC auditor that this quality over time through the sampling of clothing available in trade. It is now possible to find the clothing market with the Stamp QUEPIA of Quality, which shows that the company cares about the quality of their garments and the materials already tested and known to be unsafe are removed from the production line, while the innovations have been obtained incorporated into the equipment. With the completion of the quality standards in ABNT, it was decided that starting in 2009, even before the approval, since the consensus among group members, the same will hold for part of the group, even if initially partially while the laboratory analysis is completed. With the issue of standard and complementary and ISO 17025 accreditation of the laboratory of CEA / IAC, the QUEPIA will become the first certification system of this kind in the country.

In consequence, the evolution of PPE to the agricultural area was slow to be initiated, however, systematic and coordinated actions are being taken in order to be accelerated, which may lead to a significant improvement in a short space of time. Rather than seeking to blame for the current situation, Brazil has sought solutions.