

EURATEX submission to ECHA consultation on the U-PFAS restriction

Input on PPE Directive Category III (j) cuts by hand-held chainsaws

September 2023

In the proposal sent to ECHA, Annex E (page 30) the following reasoning as to why PPE against chainsaws do not get a derogation, was provided:

Cuts against handheld chainsaws	EN ISO 11393 series	III(l) <i>bullet wounds or knife stabs</i>	PFASs not required	Conventional fabric is not cut-resistant against a running chainsaw. Therefore, certain cut-resistant fabrics need to be used.
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Firstly, to “bullet wounds and knife stabs”, there must be a mistake at the report, as hand-held chainsaws are not clearly linked to bullet wounds and knife stabs.

Secondly, the first sentence of the rationale (last column) is correct. Indeed, the outer textile layer of a protective garment is not cut-resistant. However, the second sentence is fundamentally incorrect, as the outer (conventional) fabric layers must be made oil repellent. (see the orange layer in the picture bellow).



Chainsaws run at speeds of 20 m/s up to 28 m/s (as to EN ISO 11393-2) and the chain is constantly lubricated with machine oil. This means that machine oil is constantly 'projected' on the outer (in this case orange) textile fabric (which is indeed on itself not cut resistant).

However, under this outer fabric is a protective textile multilayer cut resistant insert, and the protection system is based on pulling out HT (high tenacity) yarns and blocking the sprocket of the chainsaw. This happens in a couple of hundreds of milliseconds. The HT yarns should be 'loose' enough to be easily pulled out; however they must be 'fixated' enough not to come loose from the outer fabric during use (at the seams) or during washing. This is a delicate balance/compromise.

When the outer fabric is only water repellent, and no longer oil repellent, the machine oil will go through the outer fabric and be absorbed by the cut resistant multilayer protective insert. This on itself will change the above-described delicate balance/compromise and cut resistant behaviour.

For further information, please see the additional documents added under Annex II folder:

- 1) publication of the 'Beratungsstelle für Unfallverhütung in der Landwirtschaft (see marked text in green on second page)
- 2) a presentation by prof. Wolff from the Hochschule für Forstwirtschaft Rottenburg (see 9th slide)
- 3) "Factors Influencing the Effective Life of Chainsaw Protective Legwear" (see 1st and 2nd recommendation at the end of the article)

Additionally, we would like to draw attention to EN ISO 11393, which is a series of related standards (on leg, body, foot, ... protection). Below extract from EN ISO 11393-2: 2019 is valid for all:

Different functional principles may be applied in order to give protection. These include:

- a) chain slipping: on contact the chain does not cut the material;
- b) clogging: fibres are drawn by the chain into the drive sprocket and block chain movement;
- c) chain braking: fibres have a high resistance to cutting and absorb rotational energy, thereby reducing the chain speed.

Often more than one principle is applied.

Below extract from the standard is in contradiction to what is written in the rationale.

3.15

protective material

material that is designed to protect the wearer against the cutting effect of a hand-held chainsaw

Note 1 to entry: The protective material may include the outer fabric of the garment.

However, it is indeed correct that the cut resistance is obtained by a protective (multilayer textile) insert. It is a delicate balance/compromise between fixating the yarns enough not to come loose during wear, washing, ... but not too strong so they can be easily pulled out by the chain moving at the speeds mentioned in 4.7.1 of the standard.

3.14

protective insert

fabric, usually placed between the outer fabric and the lining of a garment, that is able to stop the chain by clogging, braking or repelling the chain

4.7 Resistance to cutting by a chainsaw

4.7.1 Classification according to chain speed

Testing in accordance with this document shall be made at one of the following three speeds with classes designated as follows:

- class 1: $20 \text{ m/s} \pm 0,2 \text{ m/s}$;
- class 2: $24 \text{ m/s} \pm 0,2 \text{ m/s}$; and
- class 3: $28 \text{ m/s} \pm 0,2 \text{ m/s}$.

4.7.2 Requirements for cut resistance

When tested according to [6.4](#), no cut-through is allowed in any tested specimen. Any damage caused by the cutting chain to last layer next to the skin shall be considered as cut-through.

The chain is constantly lubricated with machine oil. This means that machine oil is constantly 'projected' on the outer (in the above picture orange) textile fabric;



This stopping of the chainsaw happens in a couple of hundreds milliseconds.

When the outer fabric is only water repellent, and no longer oil repellent, the machine oil will go through the outer fabric and be absorbed by the cut resistant multilayer protective insert.

The additional documents added to the Annex II folder also talk about washing the PPE regularly.

It's the PPE Manufacturer who signs the DOC (Declaration of Conformity) and takes the responsibility for the CE compliance of this category III PPE; but the manufacturer should also do a risk analysis.

The PPE EU Regulation 2016/425 says that in the risk analysis the manufacturer should not only look at the intended use and the foreseeable conditions, but also the reasonably foreseeable conditions of use. In reality these chainsaw protective PPE are not regularly washed, and at least not after each use. Hence the crucial importance of having an oil resistant outer fabric.

11. ANNEX II - ESSENTIAL HEALTH AND SAFETY REQUIREMENTS

ANNEX II

ESSENTIAL HEALTH AND SAFETY REQUIREMENTS

Essential Health and Safety Requirements (EHSRs) at Annex II to the PPE Regulation (EU) 2016/425 are drafted to ensure the highest possible level of protection. In practice this means the best compromise between efficiency of protection, usability and comfort according to the generally acknowledged state of the art. These requirements are to be applied in accordance with the foreseeable conditions of use for which the PPE is intended. They either lay down the possible protection objectives and/or refer to the performance of the PPE itself.

• 11.1. Preliminary remarks

ANNEX II (continued)

PRELIMINARY REMARKS

1. The essential health and safety requirements laid down in this Regulation are compulsory.
2. Obligations related to essential health and safety requirements apply only where the corresponding risk exists for the PPE in question.
3. The essential health and safety requirements are to be interpreted and applied in such a way as to take into account the state of the art and current practice at the time of design and manufacture, as well as technical and economic considerations which are consistent with a high degree of health and safety protection.
4. The manufacturer shall carry out a risk assessment in order to identify the risks which apply to his PPE. He shall then design and manufacture it taking into account that assessment.
5. When designing and manufacturing the PPE, and when drafting the instructions, the manufacturer shall envisage not only the intended use of the PPE, but also the reasonably foreseeable uses. Where applicable, the health and safety of persons other than the user shall be ensured.

To make sure that the protection offered by PPE is adequate against the risks encountered, the manufacturer should carry out a risk assessment of the PPE in order to identify the intended use and required level of protection under reasonably foreseeable use.

PPE multilayer protective clothing is relatively thick and heavy to give the cut resistance against chain saws, so there is an inherent discomfort. To stimulate the end-users to wear this PPE, manufacturers must make them as comfortable as possible and maximize breathability and air permeability. Hence, the water- and oil repellency of the outer fabric is obtained by a permeable finish, this means that PU or PES membranes as suggested in the list of PFAS alternatives in E.2.2.2.1 and table E12 of Annex E are excluded. Other state of the art permeable PFAS alternatives do not give oil repellency!

The guidelines of PPE EU Regulation 2016/425 says that manufacturers cannot be expected to use solutions which are still at the research stage or technical means that are not generally available on the market.

Preliminary Remark 3 – “state of the art”

The notion of “state of the art” is not defined as such in the PPE Regulation. However, it is clear from Preliminary Remark 3 that the notion of the “state of the art” includes both technical and economic aspects. In order to correspond to the “state of the art”, the technical solutions adopted to fulfil the EHSRs must employ the most effective technical means that are available at the time for a cost which is reasonable taking account of the seriousness of the harm the risk reduction is required to address.

It may not always be possible to satisfy certain EHSRs fully, given the current “state of the art”. In such cases, the PPE manufacturer must strive to fulfil the objectives set out in the EHSRs to the greatest extent possible.

Manufacturers of PPE cannot be expected to use solutions that are still at the research stage or technical means that are not generally available on the market. On the other hand, they must take account of technical progress and adopt the most effective technical solutions that are appropriate to the PPE concerned when they become available for a reasonable cost.

The “state of the art” is thus a dynamic concept: the “state of the art” evolves when more effective technical means become available or when their relative cost diminishes. Thus a technical solution that is considered to satisfy the EHSRs of the Regulation at a given time may be considered inadequate at a later time, if the state of the art has evolved. Usually, harmonised European standards are taken as a reference to define the “state of the art” at a done moment.

A PPE manufacturer can only take account of the “state of the art” at the time the PPE is