ENDOCRINE SOCIETY
Hormone Science to Health

Re: Scientific Committee on Consumer Safety (SCCS) Opinion on Resorcinol

Dear Dear Chair and Members of the Scientific Committee on Consumer Safety,

The Endocrine Society appreciates the opportunity to review the draft SCCS Opinion on Resorcinol. Founded in 1916, the Endocrine Society is the worlds oldest, largest, and most active organization dedicated to research on hormones and the clinical practice of endocrinology. Our global membership of over 18,000 includes expert researchers advancing our understanding of interference with hormonal systems by manufactured chemicals, called endocrine disrupting chemicals (EDCs).

General Comments: While recognizing that the SCCS currently looks for a 'safe dose' under the existing risk assessment procedure, we believe this approach is outdated since science has clearly demonstrated that in the case of endocrine disruptors a threshold approach is inappropriate and such thresholds may not in fact exist. This has been taken into account for EDs identified under the hazard classification in the PPP and BPR regulations, where once identified as an ED the substance cannot be used in pesticides or biocides. We believe this approach based on identification should be extended to all relevant legislation.

In view of the scientific consensus on the lack of safe thresholds for EDs, we are therefore disappointed in SCCS' conclusion that resorcinol is safe for use within current use restrictions, despite recognition that resorcinol is an endocrine disruptor according to the WHO definition. Numerous studies in humans, rodents and other animals show that resorcinol can disrupt thyroid axis function, inhibiting both the sodium/iodide cotransporter and thyroid peroxidase. These disruptions are dangerous during early pregnancy for the developing fetus, with consequences including IQ loss in children. Furthermore, the opinion fails to take into account the potential for mixture effects with other phenols such as bisphenol-A and substitutes. Finally, the document makes a fundamental error by confusing histopathology with effects of thyroid hormone on brain development without stating which endpoints are used.

Our following comments address specific points within the text of the Opinion.

Pg.21 – ln 12-14: The statements indicating that animal studies are irrelevant is concerning and subjective. Especially where human data is insufficient, it is standard practice to treat animal data as relevant with uncertainty factors applied to account for species-specific differences.

Pg. 27 – ln 1-8: The absence of a clear dose-response should not preclude recognition of hazardous properties of endocrine disrupting chemicals. Non-monotonic dose-responses (NMDR) are well-

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established features of hormone biology and relevant to thyroid hormone in particular[1]. As Demeneix and Slama state in their report to the European Parliament[2], "A key characteristic of both endogenous hormone responses and ED action is their non-linearity and that they display non-monotonic dose response curves. Both changes above or below the optimal hormonal level can be detrimental, as seen in the case of thyroid hormone levels during pregnancy." Chemicals that interfere with thyroid function may therefore have low-dose effects that may not be predicted by effects at higher dose-ranges due to NMDR.

Pg. 29 – ln 7-12: We were very surprised to see the reference to the outdated DE-UK position paper from 2011. This reference predates the EU criteria discussion and international scientific consensus statements which firmly established that potency is not relevant in the identification of an ED[3]. Since the adoption of the EU EDC criteria, a reference to this paper is no longer relevant. We reiterate that effects seen at low doses should be viewed as highly relevant due to NMDR.

Pg. 33 – ln 29-33: We disagree that a safe level for resorcinol can be determined based on the data available. The effects observed in rodents deserve more careful consideration given that even transient induced changes in thyroid hormone levels in the mother during pregnancy may have permanent effects on the fetus. As yet, there is no data disputing these types of effects for resorcinol.

In conclusion, and given the established endocrine disruptive properties of resorcinol according to the WHO definition under REACH, and the need for increased attention to low-dose effects and NMDR, we disagree with the SCCS conclusion that resorcinol is safe for use under current use restrictions. Because EDCs, once identified, should be removed from consumer products, we maintain that resorcinol should not be allowed for use in consumer products.

Sincerely,

Barbara Demeneix, B.Sc, PhD, D.Sc
Chair, EDC Advisory Group
Endocrine Society

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[1] Gore et al., EDC-2: The Endocrine Society's Second Scientific Statement on Endocrine-Disrupting Chemicals. *Endocrine Reviews*, Volume 36, Issue 6, 1 December 2015, Pages E1–E150, https://doi.org/10.1210/er.2015-1010

[2] Demeneix and Slama, 2019. Endocrine Disruptors: from Scientific Evidence to Human Health Protection. Accessed 10 December, 2020 at https://www.europarl.europa.eu/RegData/etudes/STUD/2019/608866/IPOL_STU(2019)608866_EN.pdf

[3] Solecki et al.,. Scientific principles for the identification of endocrine-disrupting chemicals: a consensus statement. *Arch Toxicol.* 2017; 91(2): 1001–1006.