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W. L. Gore & Associates' Comments on Dossier Submitters' Draft EU REACH restriction on PFAS

Public consultation

Request for Derogation: Medical Devices

June 2023

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I. Derogation Request

Gore appreciates the opportunity offered by the public consultation process to provide comments on the Annex XV Proposal for a Restriction of Per- and polyfluoroalkyl substances (PFASs) (hereinafter 'Restriction Proposal').

With this statement we would like to explain why we believe that a derogation for implantable medical devices and Class IIb and Class III[1] invasive medical devices within the scope of Regulation (EU) 2017/745 is needed and justified.

Considering the arguments and evidence presented below, Gore respectfully requests to modify the following application-specific derogation for medical devices in paragraph 6 b. of the proposed restriction as follows:

By way of derogation, paragraphs 1 and 2 shall not apply to fluoropolymers and perfluoropolyethers for use in:

> **b. implantable medical devices and Class IIb and Class III invasive medical devices within the scope of Regulation (EU) 2017/745.**

Since we suggest that hernia meshes are included in the derogation for implantable medical devices, paragraph 6.h. considered for hernia meshes should be deleted.

Since "tubes and catheters" is an imprecise definition and the proposed derogation above utilizes the device classification terminology from MDR, paragraph 6.c should be deleted, unless there are other uses of tubes intended by the Dossier Submitters and not included in the proposed derogation above.

II. Need and Justification for Derogation Modification

In recommending the derogation for medical devices currently in the restriction proposal, the Dossier Submitters recognized both the critical nature of implantable and invasive medical devices and the challenge with identifying and commercializing alternative materials. Gore believes that modification of the proposed derogation is needed and justified to adequately account for the reality of developing, testing and commercializing an alternative non-PFAS implantable or invasive medical devices. The proposed modifications are based upon the following considerations, which are supported by the evidence provided in this document:

1. Extend derogation period to reflect the actual development timelines of implantable and invasive medical devices and patient risk from removing existing devices from the market

The restriction proposal's recommendation of a 13.5-year derogation is not technically or economically feasible. Ability or timeline for identification of a material which exhibits the same exceptional, proven qualities of fluoropolymers in medical devices is unknown and unpredictable. There are no equivalent alternatives to

[1] Class I, IIa, IIb, III Medical Devices – The risk-based classifications of medical devices in the EU per EU MDR 2017/745, ranging from Class I for the lowest-risk devices to Class III for the highest. This risk-based system of device classification takes into account the vulnerability of the human body and the potential risks associated with the devices. 'Classification rules' are set out in Annex VIII of Regulation (EU) 2017/45 on medical devices (MDR).

fluoropolymers for many implantable and invasive medical devices available today. The Dossier Submitters "concluded that the evidence is sufficiently strong that technically and economically feasible alternatives are not generally available for the quantities required for use in implantable medical devices and that the substitution potential is low."[2] With the uncertainty about alternative materials, it will take in excess of 20 years to develop, clinically test, gain approval for and commercialize a single redesigned product in the EU market, considering historical experience[3] and the regulatory environment[4] (i.e., EU MDR 2017/745) for a typical implantable or invasive medical device. The restriction proposal will impact hundreds of medical devices used in the EU. This further lengthens the product replacement timeline beyond 20 years because all these products will need to be redesigned and re-evaluated simultaneously.

The burden of this lengthy and costly process to develop, test and commercialize new medical devices will be borne by medical device companies, regulatory bodies, government and the health infrastructure (ultimately the tax payers). Further explanation of these resource requirements and the potential impact upon them is shown in [redacted]

2. Clarify the scope of medical devices to include Class IIb and Class III invasive devices in line with the Medical Device Regulation

Invasive medical devices provide patients with a wide range of critical, lifesaving and risk reducing medical therapies, but are not clearly included in the restriction proposal. Successful use of the implantable devices requires the use of invasive medical devices (such as introducer sheaths and catheters), which also require fluoropolymer materials. These invasive devices are as important to include in derogations as the implants they support. Without the availability of these Class IIb and Class III invasive devices, many of the implantable medical devices included in the initial derogation would either be unusable or require additional procedures that increase cost to the hospital and carry additional safety risk for patients. Examples of these invasive products proposed for derogation inclusion are listed in [redacted]

3. Include hernia mesh in the scope of the derogation based on additional evidence provided

The restriction proposal seeks additional information regarding hernia meshes. Gore provides evidence to support that currently available alternatives are not technically and economically feasible for substitution, and therefore should be treated consistently with other implantable medical devices. Therefore, Gore requests that the exclusion of hernia meshes from the derogation in paragraph 6.b be removed. See [redacted]

4. Fluoropolymers provide unique functionality in implantable and invasive medical devices

Fluoropolymers are a commonly used class of materials in the medical device and pharmaceutical industries with an extensive documented track record of utility and safety (over 45 years on the market). These materials are used

[redacted]

in critical device components due to their inherent properties, including durability, mechanical strength, inertness, thermal stability, and resistance to chemical, biological, and physical degradation.

Fluoropolymers used in these applications meet the criteria for Polymers of Low Concern (PLCs), under the definition provided by the OECD Expert Group on Polymers[5]. They are non-toxic, not bioavailable, not bioaccumulative, not mobile in the environment and pose no potential for long-range transport (LRT).

5. Significant socio-economic impact of regulated implantable and invasive medical devices which use fluoropolymers

The suggested derogation is crucial to continuing to protect the health and rights (per Article 35 of the EU Charter of Fundamental Rights) of hundreds of thousands of European patients per year. Hundreds of life-saving or life-improving therapies for multiple high-risk disease states rely on the unique and proven properties of fluoropolymers. Even in cases where alternatives exist, they typically have significant adverse tradeoffs or do not cover diverse patient populations. Continued access to these therapies is essential to the overall health of the EU and global population.

Implantable and invasive medical devices are already highly regulated and evaluated for patient safety. Reimbursement decisions demonstrate that they have been assessed to have unique value compared to alternative treatment options. Existing regulations (e.g., EU MDR 2017/745 Annex 1) and international standards (e.g., ISO 10993 series) require comprehensive evaluations of biological safety. These regulations also establish a robust regime under which implantable and invasive medical devices are rigorously evaluated for safety, efficacy, and economic value. The established system of medical device regulation in the EU is further rationale to consider medical devices differently in the scope of a REACH restriction. Additional information on approval requirements is listed in Section IV.a.

We also believe the estimates of material use and potential emissions for implantable medical devices have been over estimated, creating a further disparity between the societal costs and perceived benefits of restricting fluoropolymers in implantable and invasive medical devices.

III. Brief Description of the End Use

In the Restriction Proposal, implantable medical devices are discussed in detail with references to many end uses, including Table A.99 in Annex A, and Section E.2.9 in Annex E. The Dossier Submitters concluded that the evidence is sufficiently strong that technically and economically feasible alternatives are not generally available for the quantities required for use in implantable medical devices and that the substitution potential is low. This section provides additional information on the end use of implantable medical devices.

In addition to implantable medical devices, the Dossier Submitters provided a limited discussion of other devices that are used in surgery and other procedures when addressing tubes and catheters. **"Tubes and catheters" is an incomplete consideration of the range of necessary devices that are required for state-of-the-art patient care,** but

[5] OECD (2009). Data analysis of the identification of correlations between polymer characteristics and potential for health or ecotoxicological concern. OECD Task Force on New Chemicals Notification and Assessment, Expert Group Meeting on Polymers; 2007 Mar; Tokyo, Japan. Paris (FR)

not clearly included in implantable devices. Such Invasive Devices are discussed in [redacted] for more clear inclusion in the derogation. There may be other uses of "tubes" in medical device applications beyond implantable and invasive devices about which others may have more information.

a) Patient Treatments and Device Considerations

Implantable and invasive medical devices (within scope of this derogation request) are used in high-risk applications to improve the health and wellbeing of patients suffering from a broad range of critical conditions and diseases. Many fluoropolymer-based medical devices, including those products described herein, have an extensive clinical history showing safety and effectiveness. We do not have detailed information on other medical device manufacturers who use fluoropolymer-based devices, however we can speak to nearly 45 million Gore implants worldwide, including around 9.5 million implants in the EU, spanning 45+ years of clinical use. Approximately [redacted] Gore medical devices are sold in the EU annually, which corresponds to nearly 114,000 lifesaving and life-improving medical procedures. [redacted]

To highlight the criticality of continued patient access to implantable medical devices and the uniqueness of specific implantable medical products to treat certain medical conditions and/or patient populations, the following two examples are provided.

Pediatric Shunts

Cyanotic congenital heart defects are defects affecting the structure of the heart which are present at birth and result in cyanosis, a below-normal oxygenation of the blood. Infants with cyanosis are frequently termed "blue babies" because the condition may result in a bluish discoloration of the skin. Depending on the nature and severity of a cyanotic congenital heart defect, staged palliative repair surgery may be indicated[6]. GORE® PROPATEN® vascular grafts configured for pediatric shunt are frequently used as part of the first stage of repair to shunt (provide) blood to the lungs. This supplemental blood flow to the lungs is life saving and intended to provide a means of increasing blood oxygenation to stabilize the infant until they can withstand a subsequent, more permanent repair.

A common vascular graft failure mode is thrombosis, especially small diameter vascular grafts of less than 6mm[7]. GORE PROPATEN Vascular graft Configured for Pediatric Shunt (3-6 mm) are designed to resist thrombus formation using a Heparin based surface modification technology. In 2018, a physician sponsored retrospective analysis demonstrated an 82% reduction in shunt occlusion and shunt related mortality in pediatric patients with cyanotic congenital heart defects[8]. The use of ePTFE grafts to palliate cyanotic defects has become routine based on their excellent performance and ease of use. Prior to the availability of ePTFE grafts, surgeons would connect the artery supplying oxygenated blood to the arm

[6] P. Syamasundar Rao. Diagnosis and Management of Cyanotic Congenital Heart Disease: Part I. http://medind.nic.in/icb/t09/i1/icbt09i1p57.pdf

[7] Begovac PC, Thomson RC, Fisher JL, Hughson A, Gällhagen A. Improvements in GORE-TEX® Vascular Graft performance by Carmeda® BioActive Surface heparin immobilization. European Journal of Vascular & Endovascular Surgery 2003;25(5):432-437

[8] Ashfaq A, Soroya MS, Iyengar A, Federman M, Reemtsen BL. Heparin-Coated Grafts Reduce Mortality in Pediatric Patients Receiving Systemic-to-Pulmonary Shunts. Pediatric Cardiology. 2018;39(3):473-477.

directly to the artery carrying blood to the lungs; sacrificing blood flow to the infant's arm. This technique (Baylock-Taussig shunt) is now considered outdated since the availability of ePTFE shunts.

Without ePTFE grafts, surgeons would have no available grafts to treat these babies [redacted] and untreated cyanosis could result in infant death. No synthetic alternatives have emerged as clinically successful. This highlights the unique biocompatibility of ePTFE in blood-contact applications, and the need for it to remain on the market for use in medical device applications.

Septal Occluders

Septal Occluders are another example of a critical need raised by the German Association for Pediatric Cardiology and Congenital Heart Disease. The Association personally appealed to medical device manufacturers to provide essential implantable devices due to critical shortages of occluder devices needed to treat neonatal and pediatric patients[redacted].

The GORE® Septal Occluder is an implantable medical device requiring minimally invasive surgery which provides unique benefits to doctors closing atrial septal defects (heart defect) and patent foramen ovales (hole between the upper chamber of the heart). Many of these patients are newborns or young children. While there are alternatives available, it is important to note that Gore's devices differ from competitors because the material design and characteristics allow for treatment of a wider range of atrial septal defects across a broader spectrum of patients. Alternative products use large amounts of woven metal in their devices which may cause the device to erode through the heart and aorta. This requires open heart surgery to correct which increases the risk of complications and death. The expanded PTFE-based device uses a minimal amount of metal to produce a softer, more conformable device which decreases the chances of eroding through the heart and therefore reducing the need for further, more risky surgery.

b) Medical Device Uses

Gore only manufactures devices used in a few of the sub-uses identified by the Dossier Submitters. However, this should be considered just a sampling of the devices that warrant derogation pursuant to an implantable and invasive medical devices derogation. Even though every type of medical device is not articulated explicitly, the rationale for derogation applies to the entire universe of devices in use or in development regulated by the MDR. For additional detail on devices within those sub-uses where Gore has direct experience, commercially available medical products are summarized in Table 1, including examples of the disease states treated and fluoropolymer materials used.

Table 1. Summary of Selected Sub-uses of Implantable and Invasive Medical Devices

Type of Device		Example Disease States Treated (Simplified)	Fluoropolymer Materials Used
Implantable Medical Devices*	Interventional cardiac occluders	Atrial septal defects (ASDs) (i.e., a hole in a wall between the heart's upper chambers)	• PTFE occluder material • [redacted]
	Interventional endoprostheses	Aneurysms (i.e., a bulge in a blood vessel caused by weakening of the vessel wall) Peripheral Arterial Disease (PAD)/Critical Limb-Threatening Ischemia (CLTI) (i.e., loss of blood flow to lower limbs due to narrowing/blockage of blood vessels, may result in limb amputation)	• PTFE or PTFE/FEP grafts and covers that serve as a biocompatible blood conduit [redacted]
	Surgical vascular grafts	Diseased (e.g., PAD/CLTI- above) or injured (e.g., due to ongoing dialysis) blood vessels that need replacement or bypass	• PTFE graft base tube [redacted]
	Cardiovascular patches	Pediatric and adult patients born with a heart defect requiring patching to repair.	• PTFE biocompatible material/surface [redacted]
	Hernia meshes	Repair of hernias (i.e., bulge of an organ or a part of an organ through the wall of the cavity that normally contains it)	• PTFE biocompatible material/surface [redacted]
	Surgical sutures	Close wounds and attach devices or tissues to other tissue. Replace heart valve connective tissues.	• PTFE monofilament suture
Non-Implantable (Invasive) Medical Devices**	Introducer sheaths	Often used to insert or deploy implantable medical devices such as some of those listed above. Often enable minimally invasive endovascular (as opposed to open/surgical) procedures.	• PTFE sheath liner [redacted]
	Balloon catheters		• PTFE balloon protector
	TIPS needles		• FEP needle protector

*Class III per EU MDR 2017/745
**Class IIb and III per EU MDR 2017/745

[redacted]

New Device Development

In addition to commercially available devices, there are numerous new devices in development that may provide therapeutic solutions where device options do not currently exist. Examples of ongoing development work include, but are not limited to, expanded or next-generation offerings of some of the Table 1 products, as well as implanted membranes to deliver cell replacement therapies.

There are multiple unmet needs, known to Gore, that may be addressed by ongoing implantable device developments that may provide critical lifesaving and risk-reducing medical treatment and may help prevent serious risks and complications, such as the following (non-exhaustive list):

- The need for open surgery which typically corresponds with:
  - Additional risk of infection (often corresponds with higher morbidity)
  - Increased procedural time (often corresponds with increased length of exposure to anaesthesia)
  - Increased hospital stay length (often corresponds with higher healthcare practitioner burden, higher risk of infection or reintervention, increased emotional/mental health impacts, and significantly increased financial cost of treatment)
- Amputation of limbs due to peripheral vascular disease (narrowing/blockage of peripheral arteries)
- Tissue erosion, or other adverse interactions of the implant with the patient's organs/native tissue
- Reinterventions (additional surgeries/procedures) needed due to failed, or otherwise inadequate, prior procedures/treatments
- Stroke due to rupture of aneurysms (bulging, weakened area of a blood vessel) or due to septal defects (hole in a wall between the heart's upper chambers)
- (Premature) Death due to disease progression