



**Manufacturing Process Legend**

(a) Manufactured by either ECF or fluorotelomerization  
 (b) Manufactured by ECF  
 (c) Manufactured by fluorotelomerization  
 (d) Other process

**Notes**

The acronym PFECA is utilized for both per and polyfluoroalkyl ether carboxylic acids and the acronym PFESA is utilized for both per and polyfluoroalkyl ether sulfonic acids. When using these acronyms, it is important to be clear as to the specific group of chemicals being referenced (i.e., per or poly).

FASAs biodegrade to PFASs, with the potential to degrade to PFASs and PFCAs in the atmosphere – see Figure 2-10.

The family tree is based on the PFAS definition provided in Buck et al. 2011<sup>[156]</sup> and OECD 2021<sup>[2318]</sup>

**PFAS Use Legend**

(1) Surfactants  
 (2) Intermediate transformation product  
 (3) Major raw material for ECF-based surfactants and surface protection products  
 (4) Raw material for surfactants and surface protection products  
 (5) Includes some fluoropolymer polymerization aids  
 (6) Ski wax, medical applications  
 (7) Major raw material for fluorotelomer-based surfactants and surface protection products  
 (8) High molecular weight polymeric plastics such as PTFE  
 (9) A broad class of polymers used largely as lubricants  
 (10) Used for surface protection