Supplementary Materials

Effects of Different Types of Stabilizers on the Properties of Foam Detergent Used for Radioactive Surface Contamination

Hao Zhang [1,2], Lili Liang [2], Hailing Xi [3,*], Xiaoyan Lin [2,*], Zhanguo Li [3] and Yu Jiao [1]

[1] School of Science, Xichang University, Xichang 615013, China
[2] Engineering Research Center of Biomass Materials, Ministry of Education, School of Materials Science and Engineering, Southwest University of Science and Technology, Mianyang 621010, China
[3] State Key Laboratory of NBC Protection for Civilian, Beijing 102205, China;
* Correspondence: xihailing@sklnbcpc.cn (H.X.); linxiaoyan@swust.edu.cn (X.L.)

Table S1. Principles, advantages and drawbacks of common radioactive surface decontamination methods

Decontamination method	Principles	Advantages	Drawbacks	Reference
Mechanical	Removal of surface contamination by wiping, scraping, suction, etc.	Easy to operate, simple equipment	Easy to cause surface damage, the solution produces radioactive aerosol, low decontamination rate	[6,7]
High-pressure water	Pressurized water is used to wash away soluble contaminants and some particles from the surface.	Unlimited surface shape, fast decontamination, and used for large area contamination	A good deal of radioactive waste liquid, easy to cause secondary pollution, and low decontamination rate	[6]
Laser	The laser beam vaporizes the contaminants by heat and separates them from the surface.	High decontamination rate, good accuracy and less radioactive waste	Generates radioactive aerosols, high decontamination costs, and usually used to decontaminate metal surface	[4,8]
Ultrasonic	Contaminants are removed from the surface by the cavitation and direct flow of ultrasound in the liquid.	Less restricted by surface shape, less damage to the surface and less chemical reagent consumption	Unsuitable for large area decontamination, and may cause damage to the bonding site	[9,10]
Reagent Washing	The solution containing chemical reagents such as acids, bases, oxidants and chelators is used to dissolve surface contaminants.	Less restricted by surface shape and high decontamination rate	Easy to corrode the surface, consume lots of chemical reagents and produce much waste liquid	[11,12]
Electrochemistry	Through the principle of electrolysis, the surface contaminants placed on the anode are dissolved in the electrolyte.	Less chemical reagent consumption and high decontamination rate	Not suitable for decontaminating large objects, usually used for metal surfaces, and expensive costs	[13]
Gel	The gel adheres to surface for a long time, and the pollutants enteres the gel for decontamination.	Decontamination is not limited by surface shape and can be used on inclined and vertical surfaces.	Complicated recovery of gels and low decontamination rate	[5,14]
Peelable Film	After the film-forming solution is sprayed onto the surface and dried, the contamination is adhered or absorbed into the peelable film.	No secondary pollution,and less radioactive waste	Long drying time to form film, complex peeling and recycling of the film, and expensive costs	[15,16]

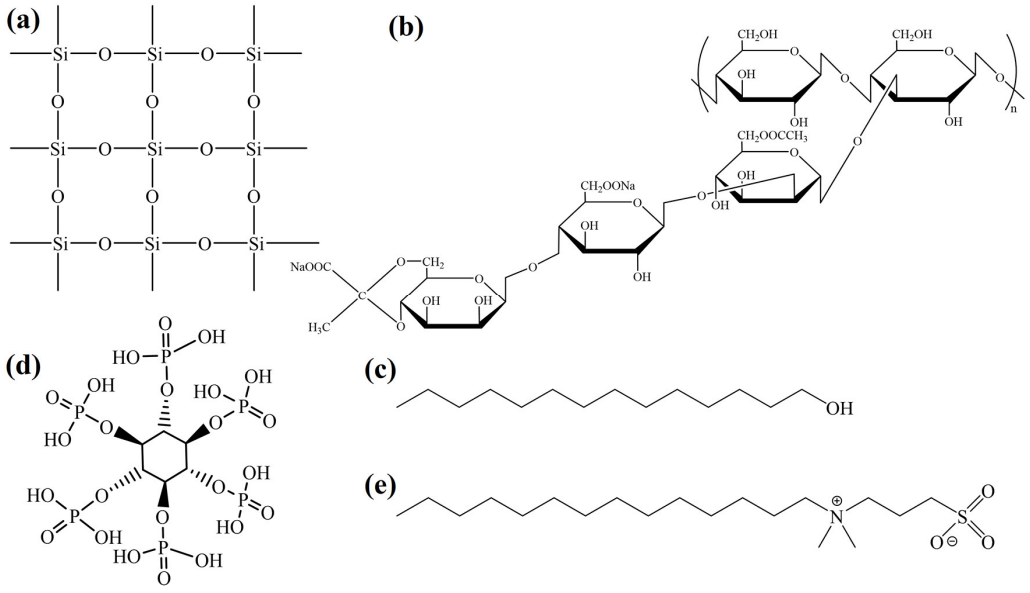

Figure S1. Chemical structures of (a)NS[20, 28], (b) XG[18], (c) TD[24], (d) PA[25] and (e)NDMP[24]