



Substitution list for hazardous chemicals

The National Substitution Group for Chemical Products (NSG Chemical Products) is a network of people from different county/regional councils and universities who are working on issues relating to chemicals from a health and environment perspective. The group aims to find and promote substitutes for hazardous chemicals.

Substitutions can be made in many different operations, and our substitution list is thus divided into four sections representing different areas:

- Laboratory chemicals
- Health care/dental care
- Cleaning/disinfection
- Miscellaneous

This document lists substitutions that have been successfully implemented in the specified operation. Thus, they are meant to be good examples that can be implemented elsewhere. However, there is no guarantee that the substitutions below will work in other contexts; each operation must test and evaluate a possible substitution.

If you have any suggestions for substitutions that you would like to share, please contact one of the following people and we will add your suggestion to the list:

Anders Bolmstedt, Västra Götalands Regionen, telephone: +46 705-95 15 29
Karin Sundberg, Uppsala Läns Landsting, telephone: +46 18-611 31 45

If you would like to know more about the group's work, please visit our website!

<http://www.vgregion.se/halsan/kemi/nsg/>

Laboratory chemicals

Product substitution of laboratory chemicals

Pink background = CMR product

Product	Area of use	Comment	Substitute	Comment	Substitution coordinator - contact
Boric acid in TBE buffer CAS: 10043-35-3	In buffer for gel electrophoresis.	Boric acid may cause birth defects and reproductive toxicity.	Acetic acid (TAE buffer) CAS: 64-19-7	TAE buffer is slightly worse than TBE buffer for certain separations.	Akademiska sjukhuset, Klinisk mikrobiologi, Annie Engström annie.engstrom@uadm.uu.se
Blue gel/silica gel (cobalt chloride) CAS: 7646-79-9	Dehumidifier with humidity indicator.	Colour indicator: cobalt chloride.	Safe-gel, yellow/orange silica gel with yellow or orange humidity indicator	Colour indicator: iron salts.	Klinisk Kemi SU, Marianne Wallgren marianne.wallgren@vgregion.se
Brilliance candida selective supplement SR0231	Substrate for differentiation of yeasts.	CMR product (R45) Contains chloramphenicol. CAS 56-75-7 H350	Chromagar Candida (CA222)	Works well; has been used in Växjö before without problems. Causes eye, skin and respiratory tract irritation.	Anna-Karin Wallgren, substratsamordnare, Mikrobiologen Karlskrona, annakarin.wallgren@kronoberg.se (Johanna Bergström, miljösamordnare johanna.bergstrom@kronoberg.se)
Detergent, Extran	Cleaning of laboratory equipment.	Nitritotriacetic acid (NTA). CAS 139-13-9	Same product but with altered content	The supplier does not want to say what the new substance is, but it is supposed to be less hazardous.	Universitetssjukhuset i Lund Anna Åkerberg anna.akerberg@skane.se
Dimethyl formamide CAS: 68-12-2	Analysis of alkaline phosphatase in leukocytes. Used to dissolve naphthol AS phosphate.	CMR product H360D.	Ethanol CAS: 64-17-5	Naphthol AS phosphate is slightly slower to dissolve in ethanol.	Klinisk Kemi SU, Marianne Wallgren marianne.wallgren@vgregion.se
DPX mounting medium		CMR product H360Df.	Pertex mounting medium	Contains xylene and ethylbenzene.	Klinisk kemi, Region Kronoberg. Johanna Pattisson Granberg johanna.pattisson-granberg@kronoberg.se
Ethidium bromide CAS: 1293-45-8	Visualisation (staining) of DNA and RNA.	Risks include splashes in the eyes, but above all, inhalation of dust from dried-up EtBr from corks, spills, dye baths, bags, equipment, etc. This also applies during waste management.	GELRED in water (Bionuclear)	Modified so as not to penetrate cell membranes.	Folkhälsomyndigheten Thomas Åkerlund thomas.akerlund@folkhalsomyndigheten.se
			Gel Star Nucleic Acid Gel Stain	More sensitive than EtBr, strands become visible without UV light. Dissolved in DMSO, thus labelled an irritant.	Göteborgs Universitet, Sahlgrenska akademien Rita Granér rita.grander@neuro.gu.se Klinisk Kemi SU, Marianne Wallgren marianne.wallgren@vgregion.se

Product	Area of use	Comment	Substitute	Comment	Substitution coordinator - contact
			SYBR Safe	The strand resolution is comparable to that of equivalent products containing EtBr.	Landstinget i Östergötland, Karin Ramstedt karin.ramstedt@lio.se Göteborgs Universitet, Sahlgrenska akademien Rita Granér rita.grander@neuro.gu.se
Fast Blue B salt CAS: 20282-70-6	Analysis of Aflatoxins, fungi.	CMR product, H350.	Fast Blue BB salt hemi (zinc chloride) salt CAS:5486-84-0	Contains 4-(Benzoylamino)-2,5-diethoxybenzenediazonium tetrachlorozincate. Suspected carcinogen, H351.	Klinisk kemi, Region Kronoberg. Johanna Pattisson Granberg, johanna.pattisson-granberg@kronoberg.se
Phenylmethanesulfonyl fluoride, PMSF CAS: 329-98-6	Used as protease inhibitor in Western blotting.	Toxic and corrosive.	"Pefabloc" 4-(2-aminoethyl)benzenesulfonyl fluoride hydrochloride, AEBSF CAS: 30827-99-7	Pefabloc worked just as well or even better. Not classified as toxic, only corrosive.	Annie Engström Uppsala Universitet annie.engstrom@uadm.uu.se
Formaldehyde CAS: 50-00-0	Testing and analysis of parasites.		ParasiTrap Dual		Linköpings universitet. Kristina Orselius kristina.orselius@liu.se
Formamide CAS: 75-12-7	Denaturation of FISH glass. Fluorescent in situ hybridisation.	CMR product H360D.	NaOH & ethanol CAS: 1310-73-2 CAS: 64-17-5	NaOH in 70% ethanol. Then 70%, 90% and absolute alcohol.	Göteborgs Universitet, Sahlgrenska akademien Rita Granér rita.grander@neuro.gu.se
Formamide CAS: 75-12-7	Fragment analysis on ABI373xl (capillary instrument from Life Technologies).	Added 2016-10-17	EDTA 0,1 mM pH 8	Slightly stronger signal strength. The analysis must be run a little faster, as EDTA evaporates faster, but there is no need to work inside a fume hood.	Annie Engström Uppsala Universitet annie.engstrom@uadm.uu.se
n-Hexane CAS: 110-54-3	E.g. HPLC	n-Hexane is particularly hazardous to the peripheral nervous system.	Heptane CAS: 142-82-5 Pentane CAS: 109-66-0	In many applications, n-Hexane can be substituted for another solvent.	Klinisk Kemi SU, Marianne Wallgren marianne.wallgren@vgregion.se
Hydrazine sulphate CAS: 10034-93-2	Calibrator for water analysis.		Stable calibrator		Annie Engström Uppsala Universitet annie.engstrom@uadm.uu.se

Product	Area of use	Comment	Substitute	Comment	Substitution coordinator - contact
Immersion oil with chlorinated paraffins and phthalates, e.g. Zeiss Immersol 518 F CAS: 84-74-2 (dibutyl phthalate) CAS: 63449-39-8	Microscopy.		Immersion oil with benzyl benzoate, e.g. Zeiss Immersol 518 N CAS: 120-51-4		Akademiska sjukhuset, flera labb, Karin Sundberg karin.sundberg@regionuppsala.se
Carbol fuchsin solution CAS: 632-99-5	For gram staining of bacteria.	Solution in ethanol or water.	Safranin CAS: 477-73-6	Works on bacteria, but not on malaria parasites.	Karolinska Universitetssjukhuset, Gunilla Buss gunilla.buss@SLL.se Akademiska sjukhuset, Klinisk mikrobiologi, Karin Sundberg karin.sundberg@regionuppsala.se
Kanamycin sulphate CAS: 25389-94-0	Select gram-negative anaerobic bacteria.	CMR-product. H360.	Kanamycin solution (Sigma, K0254)	Still kanamycin (CMR), but prepared solution reduces the handling of the substance.	Anna-Karin Wallgren, substratsamordnare, Mikrobiologen Karlskrona, annakarin.wallgren@kronoberg.se
Chloroform CAS: 67-66-3	RNA isolation.		Bromochloropropane (BCP) CAS: 109-70-6		Klinisk Kemi SU, Marianne Wallgren marianne.wallgren@vgregion.se
Chromic acid (Parengy's decalcification solution) CAS: 1333-82-0	Decalcification solution for decalcifying bones during pathological work.	Chromic acid (chromium trioxide) is carcinogenic, mutagenic, allergenic, hazardous to the environment, suspected to cause reproductive damage, etc. Chromic acid is included in the Annex XIV list of licensed chemicals in REACH.	Hydrochloric Acid (Decalcifying Solution) CAS: 7647-01-0		Region Jönköpings Län, Avd för Klinisk Patologi, Catarina Strandroth tel: catarina.strandroth@rjl.se Akademiska sjukhuset, Avd för Klinisk Patologi, Karin Sundberg karin.sundberg@regionuppsala.se
Mercuric chloride CAS: 7487-94-7	Analysis of metabolic diseases.	Very toxic, hazardous to the environment. Requires exemption from the Swedish Chemicals Agency (KemI).	Silver nitrate CAS: 7761-88-8	Also hazardous to the environment, but disposed of as hazardous waste.	Klinisk Kemi SU, Marianne Wallgren marianne.wallgren@vgregion.se
Lactophenol aniline blue CAS: 108-95-2 (phenol)	Staining (in mycology).		Metylblue 0.1% in lactic acid CAS: 28983-56-4 (metylblue)	Changed in May 9th 2019	Karolinska Universitetssjukhuset, Gunilla Buss gunilla.buss@SLL.se
Medical petroleum CAS: 64742-49-0	Cleaning of medical equipment.		Ethanol, mild soap solution CAS: 64-17-5		Karolinska Universitetssjukhuset, Gunilla Buss

Product	Area of use	Comment	Substitute	Comment	Substitution coordinator - contact
					gunilla.buss@SLL.se
	Removal of immersion oil.		Ethanol, 70% CAS: 64-17-5		Mikrobiologen, Uddevalla sjukhus, Anders Bolmstedt anders.bolmstedt@vgregion.se
			Window cleaner	Any brand can be used.	Linköpings universitet. Kristina Orselius kristina.orselius@liu.se
2-Mercaptoethanol CAS: 60-24-2	Reducing agent, used to prepare samples for electrophoresis, etc.	Very volatile, harmful through inhalation and skin contact, hazardous to the environment.	1.4-Dithiothreitol CAS: 3483-12-3		Karolinska Universitetssjukhuset, Gunilla Buss gunilla.buss@SLL.se
	RNA extraction with Qiagen's kit.				Folkhälsomyndigheten Thomas Åkerlund thomas.akerlund@folkhalsomyndigheten.se
					Landstinget Jönköping, laboratoriemedicin Catarina Strandroth, Catarina.strandroth@rjl.se
Methanol CAS: 67-56-1	Fixation of gels.	Toxic.	Ethanol CAS: 64-17-5	Did not work well in trials with PVDF membranes.	Folkhälsomyndigheten Thomas Åkerlund thomas.akerlund@folkhalsomyndigheten.se
				Fix: 3 parts absolute ethanol + 1 part acetic acid.	Göteborgs Universitet, Sahlgrenska akademien Rita Granér rita.grander@neuro.gu.se
2-Methoxyethanol CAS: 109-86-4	Analysis, dual esterase.	Licensed substance, included in the AV Group B list.	Ethanol 99% CAS 64-17-5	We first switched to 2-Ethoxyethanol, but have now been able to replace this with pure ethanol.	Klinisk Kemi SU, Marianne Wallgren marianne.wallgren@vgregion.se
Petroleumether CAS 64742-49-0	lipidanaysis	Chemsec SIN-list	2-metyl pantan CAS 107-83-5 n-pentan CAS 109-66-0	New subst. 21-03 2018	Klinisk Kemi SU, Marianne Wallgren marianne.wallgren@vgregion.se
Picric acid CAS: 88-89-1	Fixation.	Explosive when dry, toxic.	Mixture of ethanol, acetic acid and water CAS: 64-17-5 CAS: 64-19-7	Fixation and destaining liquid.	Universitetssjukhuset i Lund, Klinisk mikrobiologi Anna Åkerberg anna.akerberg@skane.se

Product	Area of use	Comment	Substitute	Comment	Substitution coordinator - contact
Thiomersal CAS: 54-64-8	Preservative.	Contains mercury.	Sodium azide CAS: 26628-22-8	NB! A general ban on mercury is in effect, but chemicals for analysis may be sold until 31 December 2014.	Karolinska Universitetssjukhuset, Gunilla Buss gunilla.buss@SLL.se
Xylene CAS: 1330-20-7	Histology lab: deparaffinisation of tissue sections before staining.		X-tra Solv and X-tra Kit	When X-tra Solv is used instead of Xylene, the product X-tra Kit is also required when mounting sections on slides.	Karolinska Universitetssjukhuset, Gunilla Buss gunilla.buss@SLL.se
Xylene CAS: 1330-20-7	Histolab: dehydration of tissue samples before embedding paraffin.		Isopropanol CAS 67-63-0		Göteborgs Universitet, Sahlgrenska akademien Rita Granér rita.grander@neuro.gu.se

Reduction or substitution of laboratory chemicals through a change of methods

Method / Product	Area of use	Comment	Substitute	Comment	Substitution coordinator - contact
Acetonitrile, n-Hexane and other solvents CAS: 75-05-8	HPLC		-	Reduced use due to switch to LC-MS/MS. 2010-09-28	
Acrylamide gel (to be cast) CAS: 79-06-1			Acrylamide gel (pre-cast)	Pre-cast gels contain significantly lower quantities of un-polymerised acrylamide. The substitution has clear work environment benefits, but we have not researched the potential environmental benefits.	Karolinska Universitetssjukhuset, Gunilla Buss gunilla.buss@SLL.se
Dichloromethane CAS: 75-09-2	Liquid-phase extraction.		-	Reduced use due to switch to solid-phase extraction. 2010-09-28	Universitetssjukhuset i Lund Anna Åkerberg anna.akerberg@skane.se
Silver nitrate CAS: 7761-88-8	Developer solution for proteins and DNA acrylamide gels (PAGE).	Particularly suitable for small amounts of DNA or proteins.	Hydrigel Isofocusing from SEBIA, for isoelectric focusing (IEF), special instruments + kits are often available.		Universitetssjukhuset i Lund Anna Åkerberg anna.akerberg@skane.se
96-hole plates	E.g. sequencing, fragment analysis, PVR reactions.		384-hole plates	Saves both chemicals and plastic when you have large series of samples. Requires a robot for pipetting.	Göteborgs Universitet, Sahlgrenska akademien Rita Granér rita.grander@neuro.gu.se
Fluorochromes	DNA sequencing.		The volume of fluorochemicals can be reduced compared to the recommended quantity.	5µL instead of 10 or 20 µL works well. Then 1 µL terminator/reaction is sufficient.	Göteborgs Universitet, Sahlgrenska akademien Rita Granér rita.grander@neuro.gu.se
32P isotopes	In LOS (Loss of Heterozygosity) and fragment analysis.		Fluorochromes		Göteborgs Universitet, Sahlgrenska akademien Rita Granér rita.grander@neuro.gu.se

Method / Product	Area of use	Comment	Substitute	Comment	Substitution coordinator - contact
Mercuric chloride CAS: 7487-94-7	Sampling of methane in sea water and sediments.	Very toxic, hazardous to the environment. Requires exemption from the Swedish Chemicals Agency (KemI).	Zinc chloride CAS: 7646-85-7	Corrosive, hazardous to the environment. Listed in the KemI PRIO database (but still better than mercury).	Margaretha Åkerholm Stockholms universitet Margaretha.akerholm@su.se
EPON (embedding plastic) Bisphenol A diglycidyl ether CAS 25068-38-6 Propylene oxide Cas: 75-56-9	Making thin sections of soft tissue. Embedding in plastic for better morphology and ultrathin sections (3 µm). Alcohol and propylene oxide required for dehydration.		LR-White (embedding plastic) Ethanol CAS 64-17-5	LR-white is a gentler plastic. Dehydration solely with alcohol.	Göteborgs Universitet, Sahlgrenska akademien Rita Granér rita.grander@neuro.gu.se
Trichloroacetic acid CAS: 76-03-9	Fixation of acrylamide gels.		Hydrigel Isofocusing from SEBIA, for isoelectric focusing (IEF), special instruments + kits are often available		Karolinska Institutet, Ulrika Olsson ulrika.olsson@ki.se
			The TCA fix bath can be used many times, and the amount can thus be reduced considerably.		Klinisk Kemi SU, Marianne Wallgren marianne.wallgren@vgregion.se
Water suction			Membrane pump for rotary evaporator is an alternative to water pump	Significant reduction of the quantity of solvent flushed down the drain. The solvent is condensed and can be collected (Vacuubrand is sold by Labinett).	SUs Lund, Ola Bergendorff ola.bergendorff@skane.se
Real-time PCR			TLDA card	5-10 times less reagent is used.	Göteborgs Universitet, Sahlgrenska akademien Rita Granér rita.grander@neuro.gu.se
Kanamycin sulphate CAS 25389-94-0	For selective cultivation of anaerobic bacteria.	Kanamycin may cause birth defects. Kanamycin is classified as a so-called CMR substance.	Operations have stopped using selective anaerobic culture plates. Today, only nutritious blood agar is used, adapted for the cultivation of anaerobic bacteria. Two antibiotic discs are placed on the cultivated sample (metrodinazol and tobramycin).	It is okay to only use anaerobic agar. It has been necessary to further identify the anaerobic bacterium even when using a selective medium, and now there is Maldi-Tof, which provides quick answers when identifying species.	Akademiska sjukhuset, Klinisk mikrobiologi, Karin Sundberg karin.sundberg@regionuppsala.se

Method / Product	Area of use	Comment	Substitute	Comment	Substitution coordinator - contact
Electro etching Nitric acid 33%			Nitric acid 3%	An etching method that uses 10 times weaker acid has been developed.	Göteborgs Universitet, Sahlgrenska akademien Rita Granér rita.grander@neuro.gu.se
Phenol [108-95-2]	Analysis of ammonium in salt water.	Toxic, hazardous to the environment and suspected mutagen.	Sodium salicylate [54-21-7]	The method requires a bit more precision.	Margaretha Åkerholm Stockholms universitet Margaretha.akerholm@su.se

Health care

Product	Area of use	Comment	Substitute	Comment	Substitution coordinator - contact
Hydroquinone (in developer solution) CAS: 123-31-9	Developing agent for photographic film.		Developer solution without hydroquinone	Reduced use due to transition to digital x-ray. 2009-02-02	Akademiska sjukhuset, Landstinget i Uppsala län Karin Sundberg karin.sundberg@regionuppsala.se
Chromium trioxide CAS: 1333-82-0	Etching of blood vessels in case of severe epistaxis.	The handling of chromium trioxide is covered by AFS 2005:17 § 26 and § 27.	Silver nitrate (lapis) sticks CAS: 7761-88-8		Akademiska sjukhuset, Öron-näsa-halsmottagning, samt Primärvården, Landstinget i Uppsala län Karin Sundberg karin.sundberg@regionuppsala.se
Medical petroleum CAS: 64742-49-0	Cleaning of medical equipment.		Ethanol, mild soap solution CAS: 64-17-5		Karolinska Universitetssjukhuset, Gunilla Buss gunilla.buss@SLL.se
	Removal of plaster residue.		Remove		Karolinska Universitetssjukhuset, Gunilla Buss gunilla.buss@SLL.se
	Removal of plaster residue.		KMI-Häftremover		KK-Operation, Sahlgrenska Sjukhuset, Anders Bolmstedt anders.bolmstedt@vgregion.se
Nail polish remover	Removal of nail polish.	Contains acetone, ethyl acetate, isopropyl myristate, etc.	KMI-Häftremover		KK-Operation, Sahlgrenska Sjukhuset, Anders Bolmstedt anders.bolmstedt@vgregion.se
Thiomersal 10% solution CAS: 54-64-8	Preservative for dialysis equipment.		Immuno-adsorba	NB! A general ban on mercury is in effect, but chemicals for analysis may be sold until 31 December 2011.	Karolinska Universitetssjukhuset, Gunilla Buss gunilla.buss@SLL.se

Dental care

Substitution of dental care products

Product	Area of use	Comment	Substitute	Comment	Substitution coordinator - contact
Ethyl chloride in dental care CAS: 75-00-3	Cooling spray in dental care.		Endo Frost Cold spray		Folktandvården, Landstinget i Uppsala län, Karin Sundberg karin.sundberg@region uppsala.se
Porcelain etch > 7% hydrofluoric acid Hydrogen fluoride (CAS: 7664-39-3)	Etching porcelain to metal.		Porcelain etch < 7% hydrofluoric acid	One can also make sure that this activity is only performed in labs.	Tor Widbom Protetiker, Oral Protetik Skövde tor.widbom@vgregion.se
Seal and protect (triclosan CAS: 3380-34-5)	Protects the root dentin.		Super Seal		Maj-Britt Rosén Tandhygienist Ftv Falköping maj-britt.rosen@vgregion.se
Systemp desensitizer/telio (glutaraldehyd CAS: 111-30-8)	Bonding sensitive tooth necks.		Super Seal		Maj-Britt Rosén Tandhygienist Ftv Falköping maj-britt.rosen@vgregion.se
Gluma N3 primer (glutaraldehyd CAS: 111-30-8)	Bonding sensitive tooth necks.		Super Seal		Maj-Britt Rosén Tandhygienist Ftv Falköping maj-britt.rosen@vgregion.se
Chloroform CAS: 67-66-3	Revision of root canal.		Guttasolve		Lars-Göte Dahlgren Endodontist, Tandläkare Endodonti Skövde lars-göte.dahlgren@vgregion.se
Clinpro white varnish/fluoride varnish (n-Hexane CAS: 110-54-3)	Duraphat varnish, which is white, light-cured.		Duraphat, Bifluorid, Profluorid	Not necessary to use white Duraphat.	Cecilia Johanson Tandläkare/ Lärare Odontologen Göteborg Cecilia.n.johanson@vgregion.se
Temp bond clear automix (dibutyl phthalate CAS 84-74-2, triclosan CAS: 3380-34-5)	Transparent temporary cement.		Regular white Temp Bond, Telio CS Link	Not necessary to use transparent cement for temporary crowns	Cecilia Johanson Tandläkare/ Lärare Odontologen Göteborg Cecilia.n.johanson@vgregion.se
Sodium perborate tetrahydrate (CAS: 10486-00-7)	Whitening of avital teeth.		Opalescence Endo		Cecilia Johanson Tandläkare/ Lärare Odontologen Göteborg Cecilia.n.johanson@vgregion.se
Planosil (silver nitrate CAS: 7761-88-8)	Disinfection of Planmeca unit waterline		Recyclean (blue) Sterilox		Maria Kjellberg, tandläkare, Landstinget Blekinge, maria.kjellberg@itblekinge.se Stina Renström, tandläkare /kvalitetssamordnare Folktandvården Gävleborgs län. stina.renstrom@lg.se

Product	Area of use	Comment	Substitute	Comment	Substitution coordinator - contact
Activator universal optosil – xantopren liquid and paste (dibutyltin dilaurate CAS: 77-58-7)	Impression material.		Provil nono Monophase		Cecilia Johanson Tandläkare/ Lärare Odontologen Göteborg Cecilia.n.johanson@vgregion.se
Oxygenal silver nitrate CAS: 7761-88-8	Cleaning of waterline.		Kavo Unit Water Cleaner		Ing-Marie Swärd, tandsköterska/miljösamordnare Folktandvården Dalarnas län, ing-marie.svard@ldalarna.se
Viscostat Clear Sodium tetraborate CAS: 13030-43-4	Haemostatic agent.		Race Gel, Astringedent, Viscostat Gel, Expasyl, iron chloride solution		Stina Renström, tandläkare/ kvalitetssamordnare Folktandvården Gävleborgs län. stina.renstrom@lg.se
Trichloroacetic acid CAS: 76-03-9	Haemostatic agent.		Race Gel, Astringedent. Viscostat Gel, adrenalin	Adrenalin is not quite as haemostatic, but a good complement.	Stina Renström, tandläkare/ kvalitetssamordnare Folktandvården Gävleborgs län. stina.renstrom@lg.se
Wavicide Glutaraldehyde CAS: 111-30-8	Disinfectant, cleaning of position trays.		GC Traycleaner powder/tablets, Cavex green clean		Ewa Andersson, miljösamordnare Folktandvården Kronobergs län, ewa.andersson@ltkronoberg.se

Dental care

Reduction or substitution through a change of methods

Product	Area of use	Comment	Substitute	Comment	Substitution coordinator - contact
Adhesive impregum/3M ESPE polyether adhesive (heptane CAS: 142-82-5)	Adhesive for implant impressions.		Perforated position tray	With a properly perforated position tray, no adhesive is necessary.	Hossein Tadayon Tandläkare FTV Alingsås hossein.tadayon@vgregion.se
Solvitan (D-limonene CAS: 5989-27-5)	Removal of cement from spatulas and instruments.		Immediate mechanical cleaning	If the instrument is cleaned immediately, there is no need for chemical cleaning.	Lena Göransson Modigh, Miljösamordnare Folktandvården Västra Götaland, lana.modigh@vgregion.se
Hartskloroform (chloroform CAS: 67-66-3)	Gutta-percha adhesive.		Sealant technology is used instead		Stina Renström, tandläkare /kvalitetssamordnare Folktandvården Gävleborgs län. stina.renstrom@lg.se
Product	Area of use	Comment	Substitute	Comment	Substitution coordinator - contact
Chlumsky's solution (phenol CAS: 108-95-2)	Antimicrobial root canal filling.		No longer required		Stina Renström, tandläkare /kvalitetssamordnare Folktandvården Gävleborgs län. stina.renstrom@lg.se
BiosonicU38 2-Benzyl-4-chlorophenol CAS: 120-32-1, Sodium 2-biphenylate CAS: 132-27-4	Cleaning agent for instruments, etc., in ultrasonic baths.		Water and detergent	The instruments to be cleaned in ultrasonic baths are still run through a thermal disinfectant afterwards.	Maria Kjellberg, tandläkare, Folktandvården Blekinge län, maria.kjellberg@ltblekinge.se

Cleaning/disinfection

Product	Area of use	Comment	Substitute	Comment	Substitution coordinator - contact
Glutaraldehyde CAS:111-30-8	Disinfectant for instruments.		Solution with peracetic acid + hydrogen peroxide, e.g. Endodis		Akademiska sjukhuset, Operation mm, Karin Sundberg karin.sundberg@regionuppsala.se

Other

Product	Area of use	Comment	Substitute	Comment	Substitution coordinator - contact
Photo Mount	Mounting spray adhesive.	Contains isopentane, isoparaffin, etc.	Display Mount Adhesive 7806	Contain fewer hazardous substances.	Västra Götalandsregionen, Anders Bolmstedt anders.bolmstedt@vgregion.se
Hydrofluoric acid in pickling paste CAS 7664-39-3	Pickling paste is used to manually process stainless-steel welding joints in order to prevent corrosion.	Pickling paste typically contains both hydrofluoric acid and nitric acid.	Phosphoric acid-based solution	Substitution requires the purchase of an "electrolyte cleaning aggregate", in which a phosphoric-acid based solution is used. There are several different brands on the market.	Landstinget i Uppsala län Karin Sundberg karin.sundberg@regionuppsala.se