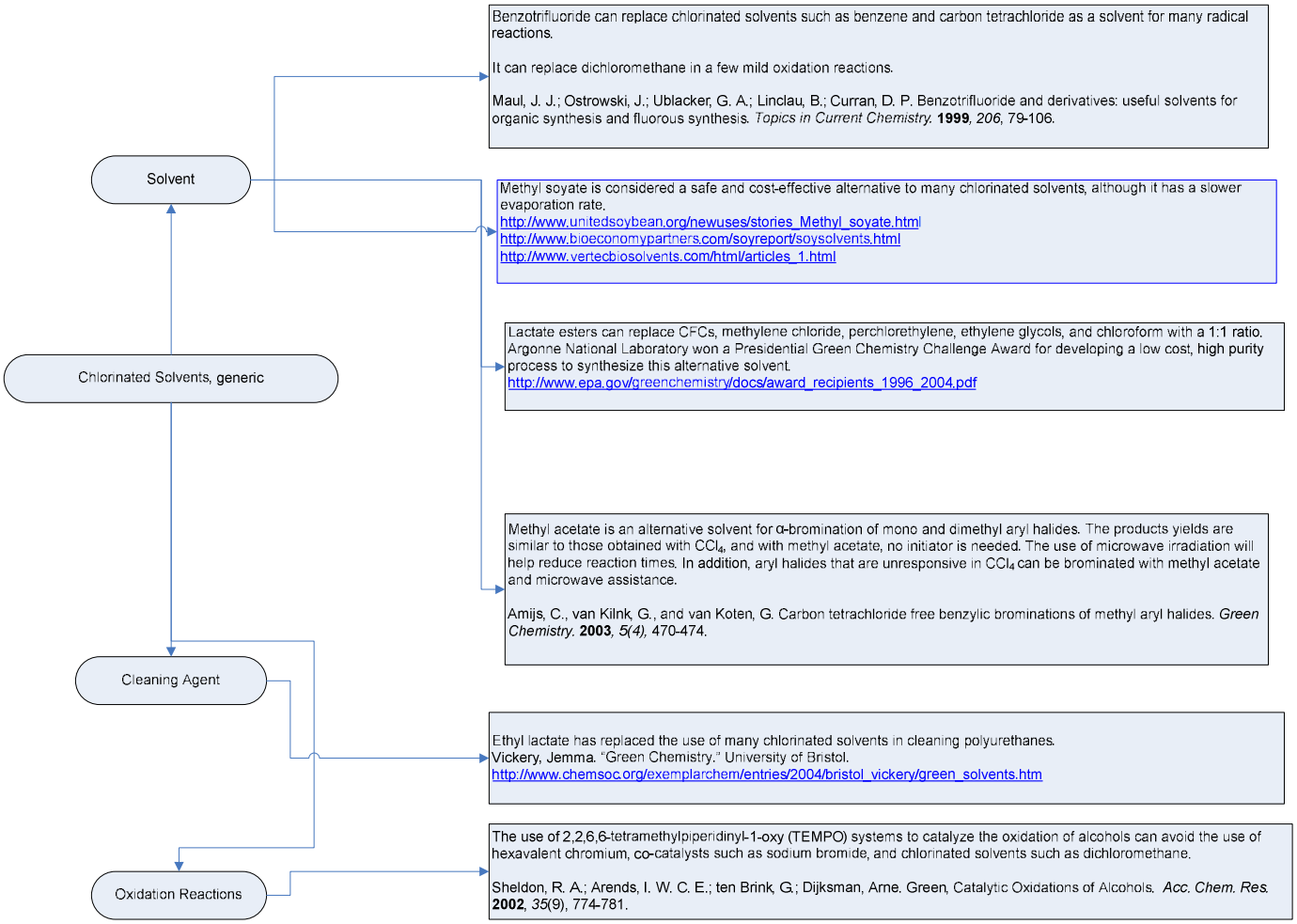
Solvent
Chlorinated Solvents, generic
Cleaning Agent
Oxidation Reactions
Benzotrifluoride can replace chlorinated solvents such as benzene and carbon tetrachloride as a solvent for many radical reactions.
It can replace dichloromethane in a few mild oxidation reactions.
Maul, J. J.; Ostrowski, J.; Ublacker, G. A.; Linclau, B.; Curran, D. P. Benzotrifluoride and derivatives: useful solvents for organic synthesis and fluorous synthesis. Topics in Current Chemistry. 1999, 206, 79-106.
Methyl soyate is considered a safe and cost-effective alternative to many chlorinated solvents, although it has a slower evaporation rate.
http://www.unitedsoybean.org/newuses/stories_Methyl_soyate.html
http://www.bioeconomypartners.com/soyreport/soysolvents.html
http://www.vertecbiosolvents.com/html/articles_1.html
Lactate esters can replace CFCs, methylene chloride, perchlorethylene, ethylene glycols, and chloroform with a 1:1 ratio. Argonne National Laboratory won a Presidential Green Chemistry Challenge Award for developing a low cost, high purity process to synthesize this alternative solvent.
http://www.epa.gov/greenchemistry/docs/award_recipients_1996_2004.pdf
Methyl acetate is an alternative solvent for α-bromination of mono and dimethyl aryl halides. The products yields are similar to those obtained with CCl_4, and with methyl acetate, no initiator is needed. The use of microwave irradiation will help reduce reaction times. In addition, aryl halides that are unresponsive in CCl_4 can be brominated with methyl acetate and microwave assistance.
Amijs, C., van Kilnk, G., and van Koten, G. Carbon tetrachloride free benzylic brominations of methyl aryl halides. Green Chemistry. 2003, 5(4), 470-474.
Ethyl lactate has replaced the use of many chlorinated solvents in cleaning polyurethanes.
Vickery, Jemma. "Green Chemistry." University of Bristol.
http://www.chemsoc.org/exemplarchem/entries/2004/bristol_vickery/green_solvents.htm
The use of 2,2,6,6-tetramethylpiperidinyl-1-oxy (TEMPO) systems to catalyze the oxidation of alcohols can avoid the use of hexavalent chromium, co-catalysts such as sodium bromide, and chlorinated solvents such as dichloromethane.
Sheldon, R. A.; Arends, I. W. C. E.; ten Brink, G.; Dijksman, Arne. Green, Catalytic Oxidations of Alcohols. Acc. Chem. Res. 2002, 35(9), 774-781.