

Associated research into the chemicals being used by the nursery

Super Professional Antiviral Disinfectant

Active ingredient chemical name: DIMETHYLBENZYL AMMONIUM CHLORIDE

- Maternal toxicity – December 2020 study - Hostetler KA, Fisher LC, Burruss BL. Prenatal developmental toxicity of alkyl dimethyl benzyl ammonium chloride and didecyl dimethyl ammonium chloride in CD rats and New Zealand White rabbits. Birth Defects Research. 2021;1–20. <https://doi.org/10.1002/bdr2.1889>
Accessed at <https://onlinelibrary.wiley.com/doi/pdf/10.1002/bdr2.1889>
- Decreases fertility - Exposure to common quaternary ammonium disinfectants decreases fertility in mice - *Reprod Toxicol.* 2014 Dec; 50: 163–170. Published online 2014 Aug 14.
Accessed at <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4260154/>
- Causes infertility in males and females –Quaternary ammonium disinfectants cause subfertility in mice by targeting both male and female reproductive processes - *Reprod Toxicol.* 2016Jan;59:159-66.doi: 10.1016/j.reprotox.2015.10.006. Epub 2015 Nov 12. Accessed at <https://pubmed.ncbi.nlm.nih.gov/26582257/>
- Reduced body weight, reduced food consumption, reduced weight gain, allergic skin reactions and asthma – Human health hazard assessment of quaternary ammonium compounds: Didecyl dimethyl ammonium chloride and alkyl (C12–C16) dimethyl benzyl ammonium chloride - *Regulatory Toxicology and Pharmacology Volume 116*, October 2020, 104717. Full PDF accessed at: <https://reader.elsevier.com/reader/sd/pii/S0273230020301434?token=F96D1144050DBEE3BED819C237B82DEDECE900A9D9200341C589536EA52F747019A7FE3C7DAEDF818194D3DA8725C653&originRegion=eu-west-1&originCreation=20210403095547>
- Dermal effects (irritation and allergies), Respiratory effects (asthma) including causing new onset asthma, increased risk of chronic obstructive pulmonary disease), ulceration of the nasal cavity and increased levels of lung inflammation markers, pulmonary cell damage and inflammation, Reproductive and developmental effects (significantly reduced fertility; fewer menstrual cycles in females and reduced sperm count in males & neural tube defects in early gestation), chemicals found in neural tissue of infants indicating exposure to pregnant females causes chemicals to cross the blood brain barrier to the foetus. - - -
Immunological effects - immune sensitization, development of skin irritation and allergic sensitization. altered cytokine levels and phagocytic function in vitro, and affected antibody production and the gut microbiome, increased inflammation, reduction in colon length (biomarker for colitis), increased tumor size and increased gene expression of several pro-tumorigenic genes in colon tumors. Increased activation of an innate immunity receptor. . . . this list goes on in this article
Potential Designated Chemicals: Quaternary Ammonium Compounds
Materials for March 4, 2020 Meeting of the Scientific Guidance Panel for Biomonitoring California1
Accessed at:
<https://biomonitoring.ca.gov/sites/default/files/downloads/PotenDesigQACs030420.pdf>
- This Fact Sheet for Parents produced by the California Dept for Pesticide Regulation shows parents specifically to avoid DIMETHYLBENZYL AMMONIUM CHLORIDE
https://www.epa.gov/sites/production/files/2013-08/documents/fact_sheet_for_families_choosing_safer_products_to_clean_and_sanitize_your_home.pdf

Sursol disinfectant

Active ingredient: QUATERNARY AMMONIUM COMPOUNDS, BENZYL-C8-18-ALKYLDIMETHYL, CHLORIDES

- Development of asthma – Quaternary Ammonium Compounds in Cleaning Products: Health & Safety Information for Health Professionals
Accessed at https://med.nyu.edu/pophealth/sites/default/files/pophealth/QACs%20Info%20for%20Physicians_18.pdf
Occupational exposure and asthma control Dick Heederik Affiliation: Institute for Risk Assessment Sciences, Utrecht University, Utrecht, The Netherlands
Accessed at: <https://erj.ersjournals.com/content/erj/50/4/1701951.full.pdf>
- Occupational asthma in professional cleaning work: a clinical study , P. Kauppi, K. Suuronen, M. Tuppurainen, T. Hannu *Occupational Medicine*, Volume 61, Issue 2, March 2011, Pages 121–126, Full PDF article accessed at:
[https://www.sciencedirect.com/science/article/pii/S0890623815300319?via%3Dihub](https://watermark.silverchair.com/kqq192.pdf?token=AQECAHi208BE49Oan9kkhW_Ercy7Dm3ZL_9Cf3qfKAc485ysgAAAqIwggKeBgkqhkiG9w0BBwagggKPMIICiwIBADCCAoQGCSqGSib3DQEHATAeBglghkgBZQMEAS4wEQQMM5vM7ANCIahrufdbAgEQgIICVbObDuZsChERCNjtdQSMDepvz4ApqNBpOuyJMhGvz7-hc3u6djTpiVkOplUiwRxGKHtoM7bEH_gOG2DFk5Q8Z4HUPEPfrBnxCVxLlzOo3ilk1K8Jcc6_JyJcvx3uiVTgOUPvbWt6nPVXC29V6_Drt3Gbxmf7rdw7DiTTJR4S62miWHblIKTWlexXY9LpKEe7CfuAeWAQ8Uhe-ct8vOzvxi9xoUB8IaT7PiRGV4HPNqFBABopE8bBeThThy90iwO6FKkCgKnfJqNWtg2W5G11kIDMgrSD7Tvo9yzGzeZFqp_iawlwFZfb4AoDk7nS5K0egeTFjCHPCe_p_gAWuTNIgvmwVgWm-GDb12wH7GaUBy5y9kNzESG7jihj6ZGwVpaQ55UHITKN_bVFUDBN9-hN77zUXeDBzOlqBNrQt4FVQ75gMwLtns62aCYeRRrIulh5-BIJh-jaLihQi3A09TCxPMeDKW6w8gYD020n3dWRUgHDBi0yq2X2lvxQo1TfmsForjLq_rKUzBuhWja5TZhBQiEYgPJjrcvnCct2pgDIRMnlhKpqXUGUNUOIWgkY94wFfPxE-t79VsbIsqgyyeYell6e3uovTQf5P2KZGn5zZPq6ra5nTZ1MCv4Q4feSGTIFou6SIC10HXqA8Fle2NX4UFoAsyDgVvYSwKyIbpbkziJJni68pEckn1tqDsJ1zUwV5Znq8AZ96wgIHzWCVdt88w3YG_qEU0hMJ4Wx8jg7L8zOZSzh1mFER-aRzBiwPYk0Gu5PJD577fggcIzJ5SoR5VdhXqzQ• Decreased fertility in males and females -Quaternary ammonium disinfectants cause subfertility in mice by targeting both male and female reproductive processes - <u>Reproductive Toxicology</u> Volume 59, January 2016, Pages 159-166. Accessed at:
<a href=) Disruption of cellular pathways, causation of asthma, birth defects, decreased fertility. Accessed at:
<https://cen.acs.org/safety/consumer-safety/know-enough-safety-quat-disinfectants/98/i30>

Related academic journal articles:

- <https://cen.acs.org/safety/consumer-safety/know-enough-safety-quat-disinfectants/98/i30>
- <https://onlinelibrary.wiley.com/doi/full/10.1002/bdr2.1064>
- <https://www.sciencedirect.com/science/article/pii/S0890623815300319?via%3Dihub>
- <https://academic.oup.com/toxsci/article/151/2/261/2240911> (developmental delay)
- <https://academic.oup.com/toxsci/article-abstract/171/1/32/5519129?redirectedFrom=fulltext> – (disruption of neurodevelopment)
- <https://biomonitoring.ca.gov/events/biomonitoring-california-scientific-guidance-panel-meeting-march-2020> - (reproductive toxicity)

- Developmental and reproductive deficits and altered immune function, increased inflammation, decreased mitochondrial function - Altered Toxicological Endpoints in Humans with Quaternary Ammonium Compound Exposure
- Accessed at: <https://www.medrxiv.org/content/10.1101/2020.07.15.20154963v1.full-text>

Anti-bacterial spray

Active ingredient: BENZALKONIUM CHLORIDE