Are Genetics Solely To Blame For Obesity Rates? (Or Are 'They' Making Us Obese?)

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Obesity, Redefined

It's a chronic medical disease, not a weakness of character. And that's just the beginning.

By Liz Brody Published: Sep 20, 2023 3:13 PM EDT

THE LIFE YOU WANT: **WEIGHT**

https://www.oprahdaily.com/life/health/a45160961/obesity-and-weight-myths/

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Top 10 Drugs by Worldwide Sales in 2024

By Editorial Team - June 10, 2025

It's been several years since COVID-19 vaccines from Pfizer and Moderna jumped to the top of the pharma industry's sales charts, displacing longtime stalwarts with unprecedented sales. But, as 2023 featured major patent expirations, the rise of weight loss drugs and other new dynamics, the year's ranking of the top 10 drugs by global sales featured its fair share of surprises.

Merck's oncology king Keytruda rose to the top last year, adding yet another feather in its cap. With more than 30 indications across various cancer types and stages, the PD-L1 inhibitor shows no signs of stopping.

https://www.onedayadvisor.com/2025/06/top-10-drugs-by-worldwide-sales-in-2024.html

2. Ozempic

Ozempic's popularity is a big reason Novo Nordisk has become Europe's most valuable company by market capitalization.
(Photo illustration by Mario Tama/Getty Images)

Company: Novo Nordisk
2023 sales: $ 14 billion (95.7 billion Danish kroner)
2024 sales: $16.7 billion

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Disease: Obesity, Type 2 diabetes, cardiovascular risk reduction in diabetes patients

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HEALTH

We wouldn't have Ozempic without Gila monsters — their hunger-regulating venom inspired weight-loss drugs

By Hilary Brueck

https://www.businessinsider.com/what-is-ozempic-glp1-drugs-developed-by-gila-monster-2023-3?op=1

BUSINESS INSIDER

Gila monster hormones can regulate blood sugar very well

It all started back in the early 1990s, when government researcher Dr. John Eng discovered that Gila monsters have a special hormone in their venom. The hormone is quite similar to a hunger-regulating hormone humans harbor in the small intestine, which helps control blood sugar levels.

In people, it's called glucagon-like peptide-1. In Gila monsters, Eng named it exendin-4.

https://www.businessinsider.com/what-is-ozempic-glp1-drugs-developed-by-gila-monster-2023-3?op=1

Endocrine CONNECTIONS

A A Amato *et al.* | Obesity and endocrine disrupting chemicals | **10**:2 | **R87**–R105

REVIEW

Obesity and endocrine-disrupting chemicals

Angelica Amorim Amato[1,2], Hailey Brit Wheeler[2] and **Bruce Blumberg[2,3,4]**

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https://ec.bioscientifica.com/view/journals/ec/10/2/EC-20-0578.xml

Abstract

Obesity is now a worldwide pandemic. The usual explanation given for the prevalence of obesity is that it results from consumption of a calorie dense diet coupled with physical inactivity. However, this model inadequately explains rising obesity in adults and in children over the past few decades, indicating that other factors must be important contributors. An endocrine-disrupting chemical (EDC) is an exogenous chemical, or mixture that interferes with any aspect of hormone action. EDCs have become pervasive in our environment, allowing humans to be exposed daily through ingestion, inhalation, and direct dermal contact. Exposure to EDCs has been causally linked with obesity in model organisms and associated with obesity occurrence in humans. Obesogens promote adipogenesis and obesity, *in vivo*, by a variety of mechanisms. The environmental obesogen model holds that exposure to obesogens elicits a predisposition to obesity and that such exposures may be an important yet overlooked factor in the obesity pandemic. Effects produced by EDCs and obesogen exposure may be passed to subsequent, unexposed generations. This "generational toxicology" is not currently factored into risk assessment by regulators but may be another important factor in the obesity pandemic as well as in the worldwide increases in the incidence of noncommunicable diseases that plague populations everywhere. This review addresses the current evidence on how obesogens affect body mass, discusses long-known chemicals that have been more recently identified as obesogens, and how the accumulated knowledge can help identify EDCs hazards.

Key Words

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Table 1 Verified obesogens with possible mechanisms of action and effects.

Verified obesogen	EDC type	Potential mechanisms	Effects	Reference
3-tert-butyl-4-hydroxyanisole (3-BHA)	Food additive (Food preservative)	Phosphorylates cAMP- response element binding protein (CREB)	Induces differentiation of 3T3-L1 preadipocytes into adipocytes, increases lipid plasma levels	(118, 119, 125)
Acrylamide	Byproduct of frying, baking, or roasting	Acts through mitogen-activated protein kinase (MAPK) and adenosine 5′-monophosphate–activated protein kinase–acetyl-CoA carboxylase (AMPK-ACC)	Induces differentiation of 3T3-L1 preadipocytes into adipocytes, increases accumulation of lipid droplets in 3T3-L1 cells	(108)
Bisphenol A (BPA)	Plasticizer	PPARγ activator, interferes with estrogen signaling	Induces differentiation of 3T3-L1 preadipocytes into adipocytes, induces obesity *in vivo*, promotes transgenerational inheritance of obesity	(154, 175, 176)
Carboxylmethylcellulose	Food additive (dietary emulsifier)	PPARγ activator	Induces adipogenesis *in vitro*, induces obesity *in vivo*, disrupts gut microbiome, promotes intestinal inflammation	(114, 115, 118)
Dibutyltin (DBT)	Organotin	PPARγ and RXR activator, induces expression of inflammatory genes	Induces differentiation of 3T3-L1 preadipocytes and MSCs into adipocytes, induces insulin resistance	(158, 160, 161)
p,p-dichlorodiphenyldichloroethylene (DDE)	Pesticide (metabolite of DDT)	Currently unknown	Induces differentiation of 3T3-L1 preadipocytes into adipocytes, induces obesity *in vivo*	(145, 177, 178)
Dichlorodiphenyltrichloroethane (DDT)	Pesticide	Currently unknown	Impairs thermogenesis in brown adipose tissue (BAT), promotes diet induced insulin resistance, promotes transgenerational inheritance of obesity	(98, 100, 143)
di-2-ethylhexyl (DEHP)	Phthalates	Promotes expression of adipogenic genes	Increases adipogenesis and lipid accumulation *in vitro*, induces obesity *in vivo*	(97, 179, 180, 181, 182, 183)
Dioctyl sodium sulfosuccinate (DOSS)	Food additive (dietary emulsifier, surfactant)	PPARγ activator	Induces differentiation of 3T3-L1 preadipocytes into adipocytes, induces obesity *in vivo*	(114, 118)
Glyphosate	Pesticide (herbicide)	Currently unknown	Promotes transgenerational inheritance of obesity	(101)
Imidacloprid	Pesticide (insecticide)	Alters regulation of AMP-activated protein kinase-α (AMPKα), alters genes regulating glucose metabolism (i.e. GLUT4, PDK4)	Induces differentiation of 3T3-L1 preadipocytes into adipocytes and insulin resistance after exposure to high-fat diet	(146, 147)
Mono-2-ethylhexyl (MEHP)	Phthalates	PPARγ activator	Increases adipogenesis and lipid accumulation *in vitro*, induces obesity *in vivo*	(179, 180, 182, 184)
Monosodium glutamate (MSG)	Food additive (flavor enhancer)	Antagonizes androgen receptor action and/or impairs secretion of glucagon-like peptide-1	Induces differentiation of 3T3-L1 preadipocytes into adipocytes	(125, 126)

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P-80	Food additive (dietary emulsifier)	PPARγ activator	Induces adipogenesis *in vitro*, induces obesity *in vivo*, disrupts gut microbiome, promotes intestinal inflammation	(114, 115, 118)
Parabens	Cosmetics, food and pharmaceutical additive	PPARγ activator	Induces differentiation of 3T3-L1 preadipocytes and mesenchymal C3H10T12 cells, induces obesity and hyperphagia *in vivo* by hypermethylating POMC enhancer	(72, 135, 136, 141)
Span-80	Food additive (surfactant)	RXRα activator	Induces differentiation of 3T3-L1 preadipocytes into adipocytes, induces obesity *in vivo*	(116, 117, 118)
Tributyltin (TBT)	Organotin	PPARγ and RXRα activator	Induces differentiation of 3T3-L1 preadipocytes and MSCs into adipocytes, alters lipid metabolism, promotes transgenerational inheritance of obesity	(77, 78, 79, 81, 82)
Triflumizole	Pesticide	PPARγ activator, promotes expression of adipogenic genes	Induces adipogenesis in uncommitted mBMSCs, promotes differentiation of 3T3-L1 preadipocytes into adipocytes, induces obesity *in vivo*	(76, 185)
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Authors: Alexis M. Temkin, Robert R. Bowers, Margaret E. Magaletta, Steven Holshouser, Adriana Maggi, Paolo Ciana, Louis J. Guillette, John A. Bowden, John R. Kucklick, John E. Baatz, and Demetri D. Spyropoulos | AUTHORS INFO & AFFILIATIONS

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Effects of Crude Oil/Dispersant Mixture and Dispersant Components on PPARγ Activity *in Vitro* and *in Vivo*: Identification of Dioctyl Sodium Sulfosuccinate (DOSS; CAS #577-11-7) as a Probable Obesogen

Authors: Alexis M. Temkin, Robert R. Bowers, Margaret E. Magaletta, Steven Holshouser, Adriana Maggi, Paolo Ciana, Louis J. Guillette, John A. Bowden, John R. Kucklick, John E. Baatz, and Demetri D. Spyropoulos | AUTHORS INFO & AFFILIATIONS

collected [collisionally activated dissociation (4), collision energy (30 eV), cell exit potential (15 V)]. Upon identification of commonalities in the fragmentation of the target masses, precursor ion scans (PIS) of *m/z* 307.3, 309.3, and 311.3 (corresponding to fragments of ethyl linoleate, ethyl oleate, and ethyl stearate, respectively) were employed to highlight analyte classes that exhibited specific in-source fatty acid fragments commonly associated with polysorbate (Tween) materials (Hvattum et al. 2012). Noting the recently reported ingredients of COREXIT, tentative identification of two dominant components of the CWAF ethanol/water extrac, polysorbate 80 (Tween 80) nd DOSS, was made by comparing the acquired mass spectrometric data (MS, MS/MS, and PIS) to previously published reports (Chen et al. 2002; Hvattum et al. 2012; Mathew et al. 2012; Ramirez et al. 2013; Zhang et al. 2012).

https://ec.bioscientifica.com/view/journals/ec/10/2/EC-20-0578.xml

Table 1 Continued.

Verified obesogen	EDC type	Potential mechanisms	Effects	Reference
Nonylphenol	Product of microbial degradation of alkylphenol ethoxylate	Induces hyperadrenalism and type 1 11β-hydroxysteroid dehydrogenase expression in adipose tissue, promotes expression of adipogenic genes	Induces differentiation of 3T3-L1 preadipocytes into adipocytes Induces obesity *in vivo*	(68, 128, 129)
P-80 (Polysorbate 80)	Food additive (dietary emulsifier)	PPARγ activator	Induces adipogenesis *in vitro*, induces obesity *in vivo*, disrupts gut microbiome, promotes intestinal inflammation	(114, 115, 118)
Parabens	Cosmetics, food and pharmaceutical additive	PPARγ activator	Induces differentiation of 3T3-L1 preadipocytes and mesenchymal C3H10T12 cells, induces obesity and hyperphagia *in vivo* by hypermethylating POMC enhancer	(72, 135, 136, 141)
Span-80	Food additive (surfactant)	RXRα activator	Induces differentiation of 3T3-L1 preadipocytes into adipocytes, induces obesity *in vivo*	(116, 117, 118)
Tributyltin (TBT)	Organotin	PPARγ and RXRα activator	Induces differentiation of 3T3-L1 preadipocytes and MSCs into adipocytes, alters lipid metabolism, promotes transgenerational inheritance of obesity	(77, 78, 79, 81, 82)
Triflumizole	Pesticide	PPARγ activator, promotes expression of adipogenic genes	Induces adipogenesis in uncommitted mBMSCs, promotes differentiation of 3T3-L1 preadipocytes into adipocytes, induces obesity *in vivo*	(76, 185)
Triphenyltin	Organotin	PPARγ activator, promotes expression of adipogenic genes	Induces differentiation of 3T3-L1 preadipocytes into adipocytes	(76)

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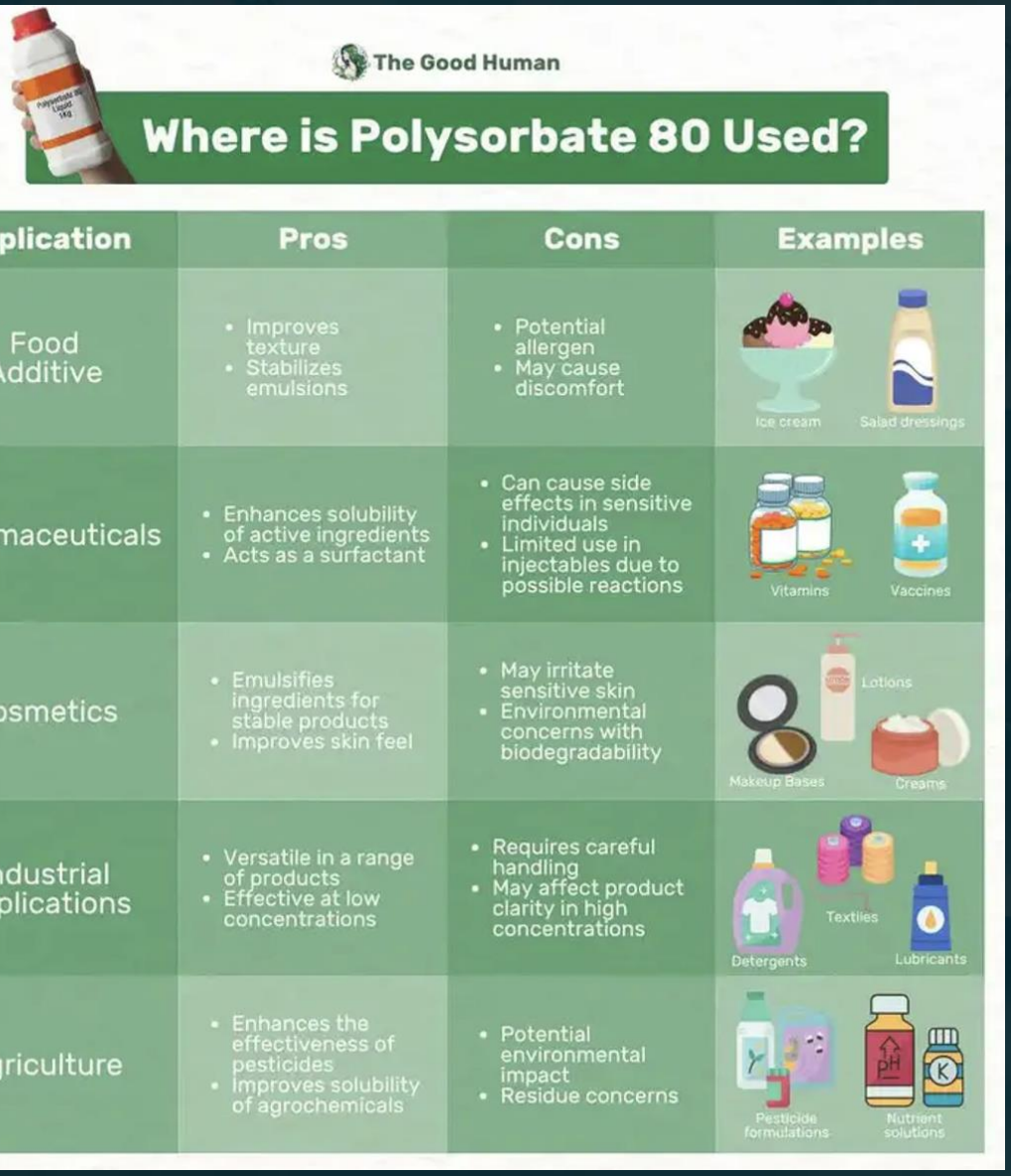

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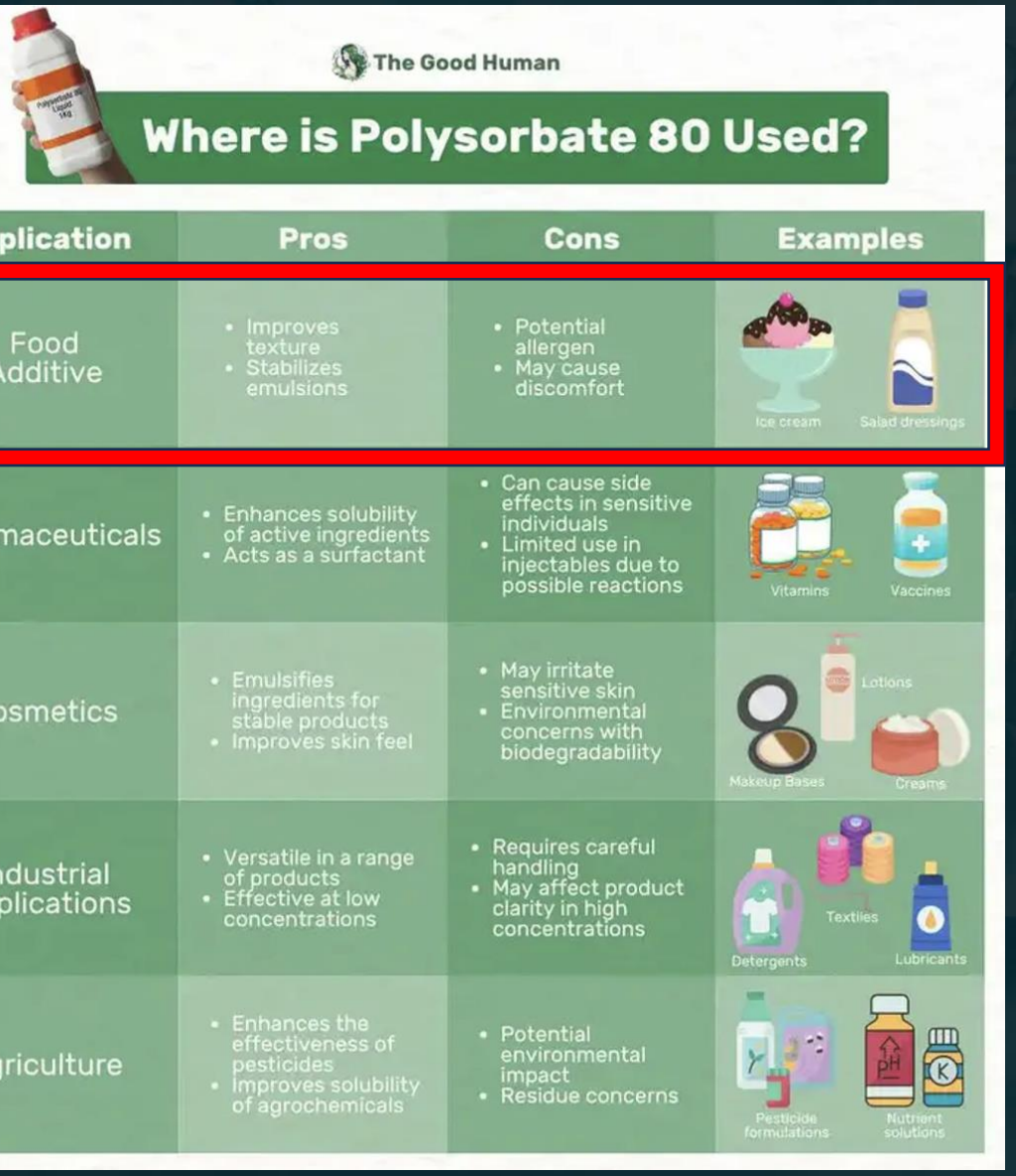

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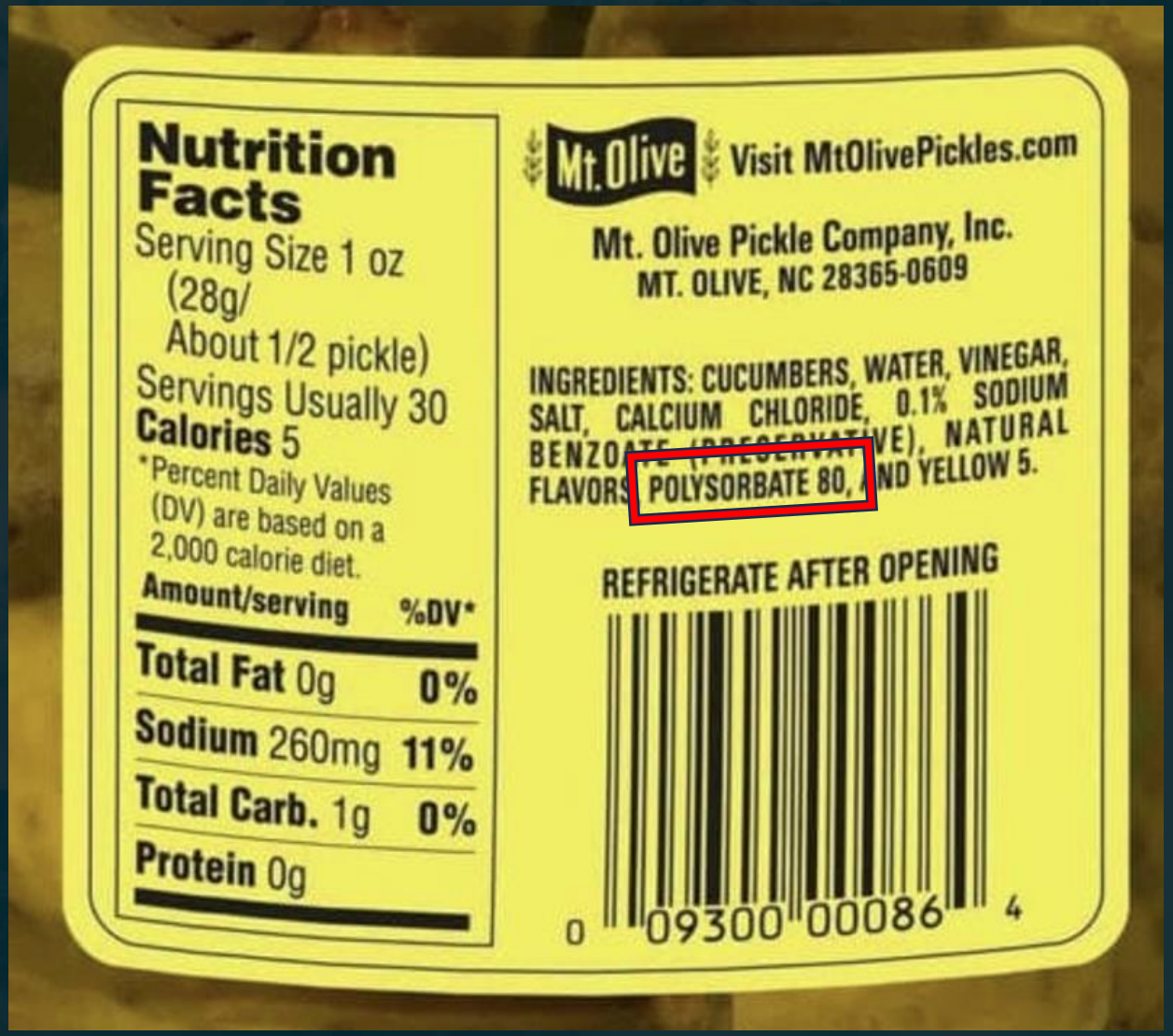

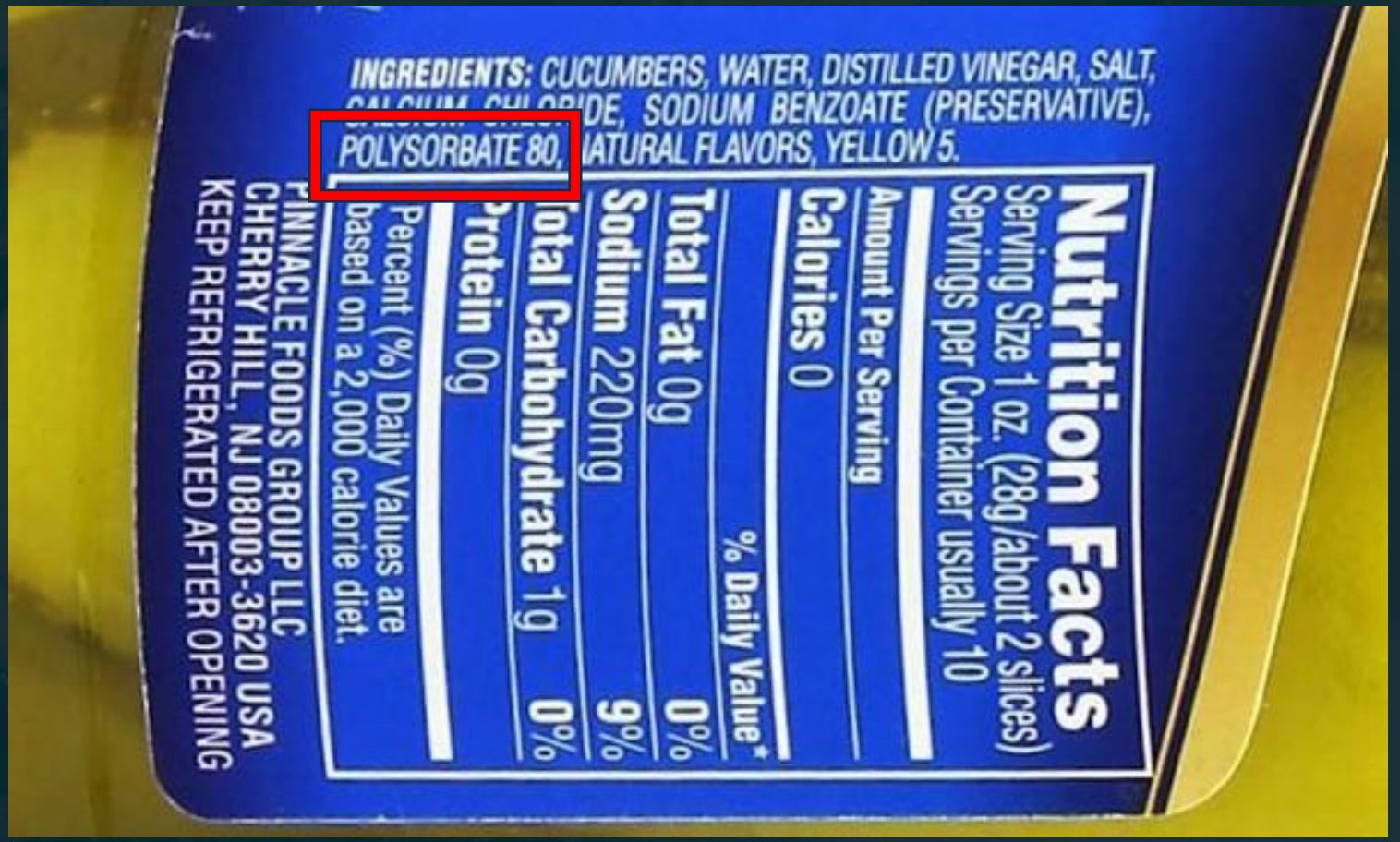

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Nutrition Facts

Usually 20 servings per container

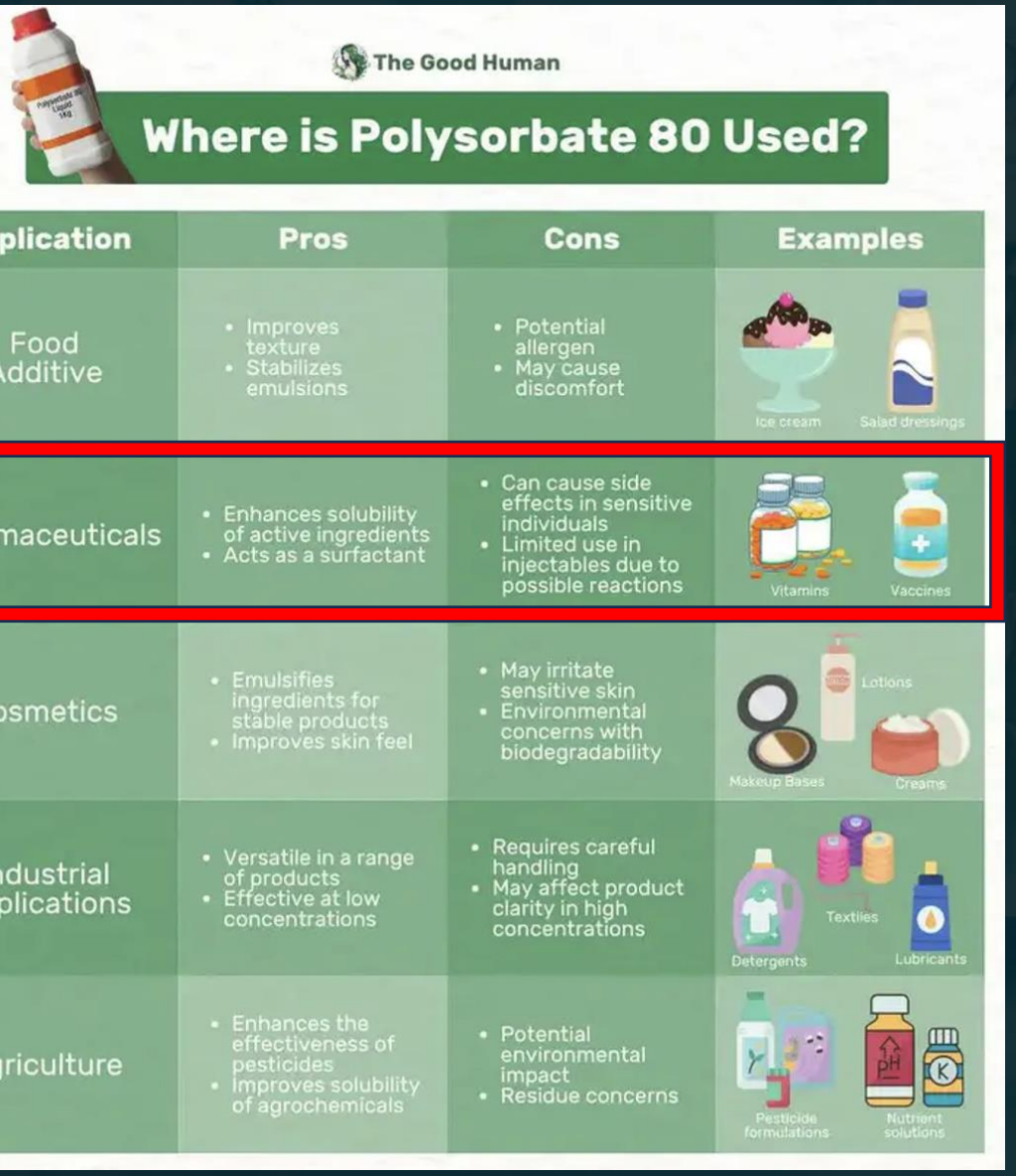
Serving size about 1/2 pickle half (28g)

Amount per serving

Calories 0

	% Daily Value
Total Fat 0g	0%
Trans Fat 0g	
Sodium 270mg	12%
Total Carbohydrate 0g	0%
Total Sugars 0g	
Includes 0g Added Sugars	0%
Protein 0g	

INGREDIENTS: FRESH CUCUMBERS, WATER, SALT, DISTILLED VINEGAR, CONTAINS LESS THAN 2% OF DRIED GARLIC, CALCIUM CHLORIDE, SODIUM BENZOATE (TO PRESERVE FLAVOR), SPICE, MUSTARD SEED, NATURAL [illegible] PEPPERS, POLYSORBATE 80, [illegible]LEORESIN TURMERIC.



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Vaccine Excipient & Media Summary

Excipients Included in U.S. Vaccines, by Vaccine

In addition to weakened or killed disease antigens (viruses or bacteria), vaccines contain very small amounts of other ingredients – excipients or media.

Some excipients are added to a vaccine for a specific purpose. These include:
Preservatives, to prevent contamination. For example, thimerosal.
Adjuvants, to help stimulate a stronger immune response. For example, aluminum salts.
Stabilizers, to keep the vaccine potent during transportation and storage. For example, sugars or gelatin.

Others are residual trace amounts of materials that were used during the manufacturing process and removed. These include:
Cell culture materials, used to grow the vaccine antigens. For example, egg protein, various culture media.
Inactivating ingredients, used to kill viruses or inactivate toxins. For example, formaldehyde.
Antibiotics, used to prevent contamination by bacteria. For example, neomycin.

The following table lists all components, other than antigens, shown in the manufacturers' package insert (PI) for each vaccine. Each of these PIs, which can be found on the FDA's website (see below) contains a description of that vaccine's manufacturing process, including the amount and purpose of each substance. In most PIs, this information is found in Section 11: "Description."

All information was extracted from manufacturers' package inserts.
If in doubt about whether a PI has been updated since this table was prepared, check the FDA's website at:
http://www.fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm093833.htm

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Vaccine	Contains
Adenovirus	human-diploid fibroblast cell cultures (strain WI-38), Dulbecco's Modified Eagle's Medium, fetal bovine serum, sodium bicarbonate, monosodium glutamate, sucrose, D-mannose, D-fructose, dextrose, human serum albumin, potassium phosphate, plasdone C, anhydrous lactose, microcrystalline cellulose, polacrilin potassium, magnesium stearate, cellulose acetate phthalate, alcohol, acetone, castor oil, FD&C Yellow #6 aluminum lake dye
Anthrax (Biothrax)	amino acids, vitamins, inorganic salts, sugars, aluminum hydroxide, sodium chloride, benzethonium chloride, formaldehyde
BCG (Tice)	glycerin, asparagine, citric acid, potassium phosphate, magnesium sulfate, iron ammonium citrate, lactose
Cholera (Vaxchora)	casamino acids, yeast extract, mineral salts, anti-foaming agent, ascorbic acid, hydrolyzed casein, sodium chloride, sucrose, dried lactose, sodium bicarbonate, sodium carbonate
DT (Sanofi)	aluminum phosphate, isotonic sodium chloride, formaldehyde, casein, cystine, maltose, uracil, inorganic salts, vitamins, dextrose
DTaP (Daptacel)	aluminum phosphate, formaldehyde, glutaraldehyde, 2-phenoxyethanol, Stainer-Scholte medium, casamino acids, dimethyl-beta-cyclodextrin, Mueller's growth medium, ammonium sulfate, modified Mueller-Miller casamino acid medium without beef heart infusion
DTaP (Infanrix)	Fenton medium containing a bovine extract, modified Latham medium derived from bovine casein, formaldehyde, modified Stainer-Scholte liquid medium, glutaraldehyde, aluminum hydroxide, sodium chloride, polysorbate 80 (Tween 80)
DTaP-IPV (Kinrix)	Fenton medium containing a bovine extract, modified Latham medium derived from bovine casein, formaldehyde, modified Stainer-Scholte liquid medium, glutaraldehyde, aluminum hydroxide, VERO cells, a continuous line of monkey kidney cells, Calf serum, lactalbumin hydrolysate, sodium chloride, polysorbate 80 (Tween 80), neomycin sulfate, polymyxin B
DTaP-IPV (Quadracel)	modified Mueller's growth medium, ammonium sulfate, modified Mueller-Miller casamino acid medium without beef heart infusion, formaldehyde, aluminum phosphate, Stainer-Scholte medium, casamino acids, dimethyl-beta-cyclodextrin, MRC-5 cells, normal human diploid cells, CMRL 1969 medium supplemented with calf serum, Medium 199 without calf serum, 2-phenoxyethanol, polysorbate 80, glutaraldehyde, neomycin, polymyxin B sulfate

http://www.fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm093833.htm

Vaccine	Contains
DTaP-HepB-IPV (Pediarix)	Fenton medium containing a bovine extract, modified Latham medium derived from bovine casein, formaldehyde, glutaraldehyde, modified Stainer-Scholte liquid medium, VERO cells, a continuous line of monkey kidney cells, calf serum and lactalbumin hydrolysate, aluminum hydroxide, aluminum phosphate, aluminum salts, sodium chloride, polysorbate 80 (Tween 80), neomycin sulfate, polymyxin B, yeast protein.
DTaP-IPV/Hib (Pentacel)	aluminum phosphate, polysorbate 80, sucrose, formaldehyde, glutaraldehyde, bovine serum albumin, 2-phenoxyethanol, neomycin, polymyxin B sulfate, modified Mueller's growth medium, ammonium sulfate, modified Mueller-Miller casamino acid medium without beef heart infusion, Stainer-Scholte medium, casamino acids, dimethyl-beta-cyclodextrin. MRC-5 cells (a line of normal human diploid cells), CMRL 1969 medium supplemented with calf serum, Medium 199 without calf serum, modified Mueller and Miller medium
Hib (ActHIB)	sodium chloride, modified Mueller and Miller medium (the culture medium contains milk-derived raw materials [casein derivatives]), formaldehyde, sucrose
Hib (Hiberix)	saline, synthetic medium, formaldehyde, sodium chloride, lactose
Hib (PedvaxHIB)	complex fermentation media, amorphous aluminum hydroxyphosphate sulfate, sodium chloride
Hep A (Havrix)	MRC-5 human diploid cells, formalin, aluminum hydroxide, amino acid supplement, phosphate-buffered saline solution, polysorbate 20, neomycin sulfate, aminoglycoside antibiotic
Hep A (Vaqta)	MRC-5 diploid fibroblasts, amorphous aluminum hydroxyphosphate sulfate, non-viral protein, DNA, bovine albumin, formaldehyde, neomycin, sodium borate, sodium chloride
Hep B (Engerix-B)	aluminum hydroxide, yeast protein, sodium chloride, disodium phosphate dihydrate, sodium dihydrogen phosphate dihydrate
Hep B (Recombivax)	soy peptone, dextrose, amino acids, mineral salts, phosphate buffer, formaldehyde, potassium aluminum sulfate, amorphous aluminum hydroxyphosphate sulfate, yeast protein
Hep B (Heplisav-B)	vitamins and mineral salts, yeast protein, yeast DNA, deoxycholate, phosphorothioate linked oligodeoxynucleotide, phosphate buffered saline, sodium phosphate, dibasic dodecahydrate, monobasic dehydrate, polysorbate 80

http://www.fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm093833.htm

Vaccine	Contains
Hep A/Hep B (Twinrix)	MRC-5 human diploid cells, formalin, aluminum phosphate, aluminum hydroxide, amino acids, sodium chloride, phosphate buffer, polysorbate 20, neomycin sulfate, yeast protein
Human Papillomavirus (HPV) (Gardasil 9)	vitamins, amino acids, mineral salts, carbohydrates, amorphous aluminum hydroxyphosphate sulfate, sodium chloride, L-histidine, polysorbate 80, sodium borate, yeast protein
Influenza (Afluria) Trivalent & Quadrivalent	sodium chloride, monobasic sodium phosphate, dibasic sodium phosphate, monobasic potassium phosphate, potassium chloride, calcium chloride, sodium taurodeoxycholate, ovalbumin, sucrose, neomycin sulfate, polymyxin B, beta-propiolactone, thimerosal (multi-dose vials)
Influenza (Fluad)	squalene, polysorbate 80, sorbitan trioleate, sodium citrate dehydrate, citric acid monohydrate, neomycin, kanamycin, barium, egg proteins, cetyltrimethylammonium bromide (CTAB), formaldehyde
Influenza (Fluarix) Trivalent & Quadrivalent	octoxynol-10 (TRITON X-100), α-tocopheryl hydrogen succinate, polysorbate 80 (Tween 80), hydrocortisone, gentamicin sulfate, ovalbumin, formaldehyde, sodium deoxycholate, sodium phosphate-buffered isotonic sodium chloride
Influenza (Flublok) Trivalent & Quadrivalent	sodium chloride, monobasic sodium phosphate, dibasic sodium phosphate, polysorbate 20 (Tween 20), baculovirus and *Spodoptera frugiperda* cell proteins, baculovirus and cellular DNA, Triton X-100, lipids, vitamins, amino acids, mineral salts
Influenza (Flucelvax) Trivalent & Quadrivalent	Madin Darby Canine Kidney (MDCK) cell protein, protein other than HA, MDCK cell DNA, polysorbate 80, cetyltrimethlyammonium bromide, and β-propiolactone
Influenza (Flulaval) Trivalent & Quadrivalent	ovalbumin, formaldehyde, sodium deoxycholate, α-tocopheryl hydrogen succinate, polysorbate 80, thimerosal (multi-dose vials)
Influenza (Fluvirin)	ovalbumin, polymyxin, neomycin, betapropiolactone, nonylphenol ethoxylate, thimerosal
Influenza (Fluzone) Quadrivalent	formaldehyde, egg protein, octylphenol ethoxylate (Triton X-100), sodium phosphate-buffered isotonic sodium chloride solution, thimerosal (multi-dose vials), sucrose

http://www.fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm093833.htm

Vaccine	Contains
Influenza (Fluzone) High Dose	egg protein, octylphenol ethoxylate (Triton X-100), sodium phosphate-buffered isotonic sodium chloride solution, formaldehyde, sucrose
Influenza (Fluzone) Intradermal	formaldehyde, egg protein, octylphenol ethoxylate (Triton X-100), sodium phosphate-buffered isotonic sodium chloride solution, sucrose
Influenza (FluMist) Quadrivalent	monosodium glutamate, hydrolyzed porcine gelatin, arginine, sucrose, dibasic potassium phosphate, monobasic potassium phosphate, ovalbumin, gentamicin sulfate, ethylenediaminetetraacetic acid (EDTA)
Japanese Encephalitis (Ixiaro)	aluminum hydroxide, protamine sulfate, formaldehyde, bovine serum albumin, host cell DNA, sodium metabisulphite, host cell protein
Meningococcal (MenACWY-Menactra)	Watson Scherp media containing casamino acid, modified culture medium containing hydrolyzed casein, ammonium sulfate, sodium phosphate, formaldehyde, sodium chloride
Meningococcal (MenACWY-Menveo)	formaldehyde, amino acids, yeast extract, Franz complete medium, CY medium
Meningococcal (MenB – Bexsero)	aluminum hydroxide, *E. coli*, histidine, sucrose, deoxycholate, kanamycin
Meningococcal (MenB – Trumenba)	defined fermentation growth media, polysorbate 80, aluminum phosphate, histidine buffered saline
MMR (MMR-II)	chick embryo cell culture, WI-38 human diploid lung fibroblasts, vitamins, amino acids, fetal bovine serum, sucrose, glutamate, recombinant human albumin, neomycin, sorbitol, hydrolyzed gelatin, sodium phosphate, sodium chloride
MMRV (ProQuad) (Frozen)	chick embryo cell culture, WI-38 human diploid lung fibroblasts, MRC-5 cells, sucrose, hydrolyzed gelatin, sodium chloride, sorbitol, monosodium L-glutamate, sodium phosphate dibasic, human albumin, sodium bicarbonate, potassium phosphate monobasic, potassium chloride; potassium phosphate dibasic, neomycin, bovine calf serum
MMRV (ProQuad) (Refrigerator Stable)	chick embryo cell culture, WI-38 human diploid lung fibroblasts, MRC-5 cells, sucrose, hydrolyzed gelatin, urea, sodium chloride, sorbitol, monosodium L-glutamate, sodium phosphate, recombinant human albumin, sodium bicarbonate, potassium phosphate, potassium chloride, neomycin, bovine serum albumin

http://www.fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm093833.htm

Vaccine	Contains
Pneumococcal (PCV13 – Prevnar 13)	soy peptone broth, casamino acids and yeast extract-based medium, CRM197 carrier protein, polysorbate 80, succinate buffer, aluminum phosphate
Pneumococcal (PPSV-23 – Pneumovax)	phenol
Polio (IPV – Ipol)	Eagle MEM modified medium, calf bovine serum, M-199 without calf bovine serum, vero cells (a continuous line of monkey kidney cells), phenoxyethanol, formaldehyde, neomycin, streptomycin, polymyxin B
Rabies (Imovax)	human albumin, neomycin sulfate, phenol red indicator, MRC-5 human diploid cells, beta-propriolactone
Rabies (RabAvert)	chicken fibroblasts, β-propiolactone, polygeline (processed bovine gelatin), human serum albumin, bovine serum, potassium glutamate, sodium EDTA, ovalbumin, neomycin, chlortetracycline, amphotericin B
Rotavirus (RotaTeq)	sucrose, sodium citrate, sodium phosphate monobasic monohydrate, sodium hydroxide, polysorbate 80, cell culture media, fetal bovine serum, vero cells *[DNA from porcine circoviruses (PCV) 1 and 2 has been detected in RotaTeq. PCV-1 and PCV-2 are not known to cause disease in humans.]*
Rotavirus (Rotarix)	Vero cells, dextran, Dulbecco's Modified Eagle Medium (sodium chloride, potassium chloride, magnesium sulfate, ferric (III) nitrate, sodium phosphate, sodium pyruvate, D-glucose, concentrated vitamin solution, L-cystine, L-tyrosine, amino acids solution, L-glutamine, calcium chloride, sodium hydrogenocarbonate, and phenol red), sorbitol, sucrose, calcium carbonate, sterile water, xanthan *[Porcine circovirus type 1 (PCV-1) is present in Rotarix. PCV-1 is not known to cause disease in humans.]*
Smallpox (Vaccinia) (ACAM2000)	African Green Monkey kidney (Vero) cells, HEPES, 2% human serum albumin, 0.7% sodium chloride USP, 5% Mannitol USP, neomycin, polymyxin B, 50% Glycerin USP, 0.25% phenol USP

http://www.fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm093833.htm

Vaccine	Contains
Td (Tenivac)	aluminum phosphate, formaldehyde, modified Mueller-Miller casamino acid medium without beef heart infusion, ammonium sulfate, sodium chloride, water
Td (Mass Biologics)	aluminum phosphate, formaldehyde, thimerosal, modified Mueller's media which contains bovine extracts, ammonium sulfate
Tdap (Adacel)	aluminum phosphate, formaldehyde, 2-phenoxyethanol, Stainer-Scholte medium, casamino acids, dimethyl-beta-cyclodextrin, glutaraldehyde, modified Mueller-Miller casamino acid medium without beef heart infusion, ammonium sulfate, modified Mueller's growth medium
Tdap (Boostrix)	modified Latham medium derived from bovine casein, Fenton medium containing a bovine extract, formaldehyde, modified Stainer-Scholte liquid medium, glutaraldehyde, aluminum hydroxide, sodium chloride, polysorbate 80
Typhoid (Typhim Vi)	hexadecyltrimethylammonium bromide, formaldehyde, phenol, polydimethylsiloxane, disodium phosphate, monosodium phosphate, semi-synthetic medium, sodium chloride
Typhoid (Vivotif Ty21a)	yeast extract, casein, dextrose, galactose, sucrose, ascorbic acid, amino acids, lactose, magnesium stearate. gelatin
Varicella (Varivax) *Frozen*	MRC-5 human diploid cells, including DNA & protein, sucrose, hydrolyzed gelatin, sodium chloride, monosodium L-glutamate, sodium phosphate dibasic, sodium phosphate monobasic, potassium phosphate monobasic, potassium chloride, EDTA, neomycin, fetal bovine serum
Varicella (Varivax) *Refrigerator Stable*	MRC-5 human diploid cells, including DNA & protein, sucrose, hydrolyzed gelatin, sodium chloride, monosodium L-glutamate, urea, sodium phosphate dibasic, potassium phosphate monobasic, potassium chloride, neomycin, bovine calf serum
Yellow Fever (YF-Vax)	sorbitol, gelatin, sodium chloride, egg protein
Zoster (Shingles) (Zostavax) *Frozen*	MRC-5 human diploid cells, including DNA & protein, sucrose, hydrolyzed porcine gelatin, sodium chloride, monosodium L-glutamate, sodium phosphate dibasic, potassium phosphate monobasic, potassium chloride; neomycin, bovine calf serum
Zoster (Shingles) (Zostavax) *Refrigerator Stable*	MRC-5 human diploid cells, including DNA & protein, sucrose, hydrolyzed porcine gelatin, urea, sodium chloride, monosodium L-glutamate, sodium phosphate dibasic, potassium phosphate monobasic, potassium chloride, neomycin, bovine calf serum
Zoster (Shingles) (Shingrix)	sucrose, sodium chloride, dioleoyl phosphatidylcholine (DOPC), potassium dihydrogen phosphate, cholesterol, sodium dihydrogen phosphate dihydrate, disodium phosphate anhydrous, dipotassium phosphate, polysorbate 80

http://www.fda.gov/BiologicsBloodVaccines/Vaccines/ApprovedProducts/ucm093833.htm

Here's a list of **prescription medications** known to contain **Polysorbate 80** as an excipient (inactive ingredient):

https://chatgpt.com/

Here's a list of **prescription medications** known to contain **Polysorbate 80** as an excipient (inactive ingredient):

💉 Injectables & Biologics

- **Amiodarone (IV formulation)** – antiarrhythmic agent PMC +15
- **Dulaglutide (Trulicity)** – GLP-1 agonist for diabetes
- **Hyaluronidase (Hylenex Recombinant)** – enzymatic antidote PMC
- **Anidulafungin (Eraxis)** – antifungal PMC +15
- **Ofatumumab (Kesimpta)** – MS monoclonal antibody PMC
- **Siltuximab (Sylvant)** – anti-IL6 monoclonal antibody PMC
- **Ibalizumab (Trogarzo)** – antiretroviral for HIV PMC +9

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Here's a list of **prescription medications** known to contain **Polysorbate 80** as an excipient (inactive ingredient):

🧬 Monoclonal Antibodies for Immune & Rheumatic Conditions

- **Adalimumab (Humira)** – anti-TNF-α; Humira version contains Polysorbate 80 PMC +15
- **Golimumab (Simponi)** – anti-TNF-α PMC
- **Guselkumab (Tremfya)** – anti-IL-23 PMC
- **Infliximab biosimilars** (e.g. Remicade, Inflectra) – anti-TNF-α
- **Ustekinumab (Stelara)** – anti-IL-12/23 PMC
- **Aducingumab** such as **Dupixent** – contains approximately 4 mg Polysorbate 80 per dose Reddit +15

🧪 Other Injectables

- **Interferon alfa-2b (Intron A)** – antiviral PMC

https://chatgpt.com/

Here's a list of **prescription medications** known to contain **Polysorbate 80** as an excipient (inactive ingredient):

👶 Neonatal & Supportive Care

- **Erythropoietin or multivitamin injections** in neonatal care often include Polysorbate 80 BioMed Central

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💉 Vaccines (contain small amounts)

Polysorbate 80 is used as a stabilizer in several vaccines:

- **COVID-19 (Janssen/Novavax)** Wikipedia +2 Reddit
- **DTaP series** (e.g. Infanrix, Kinrix, Pediarix, Pentacel) Wikipedia +1
- **Influenza vaccines** (Fluad, Flulaval, Fluarix, Flucelvax) Wikipedia +1
- **HPV (Gardasil 9)** Wikipedia +1
- **Shingles (Shingrix)**

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✅ Summary

Polysorbate 80 is most commonly found in:

- Injectable cardiovascular, antifungal, antiviral, and insulin-related drugs
- Biologic therapies (monoclonal antibodies) like Humira, Simponi, Stelara, Tremfya, Dupixent
- Many vaccines, including those for COVID-19, flu, DTaP, HPV, and shingles

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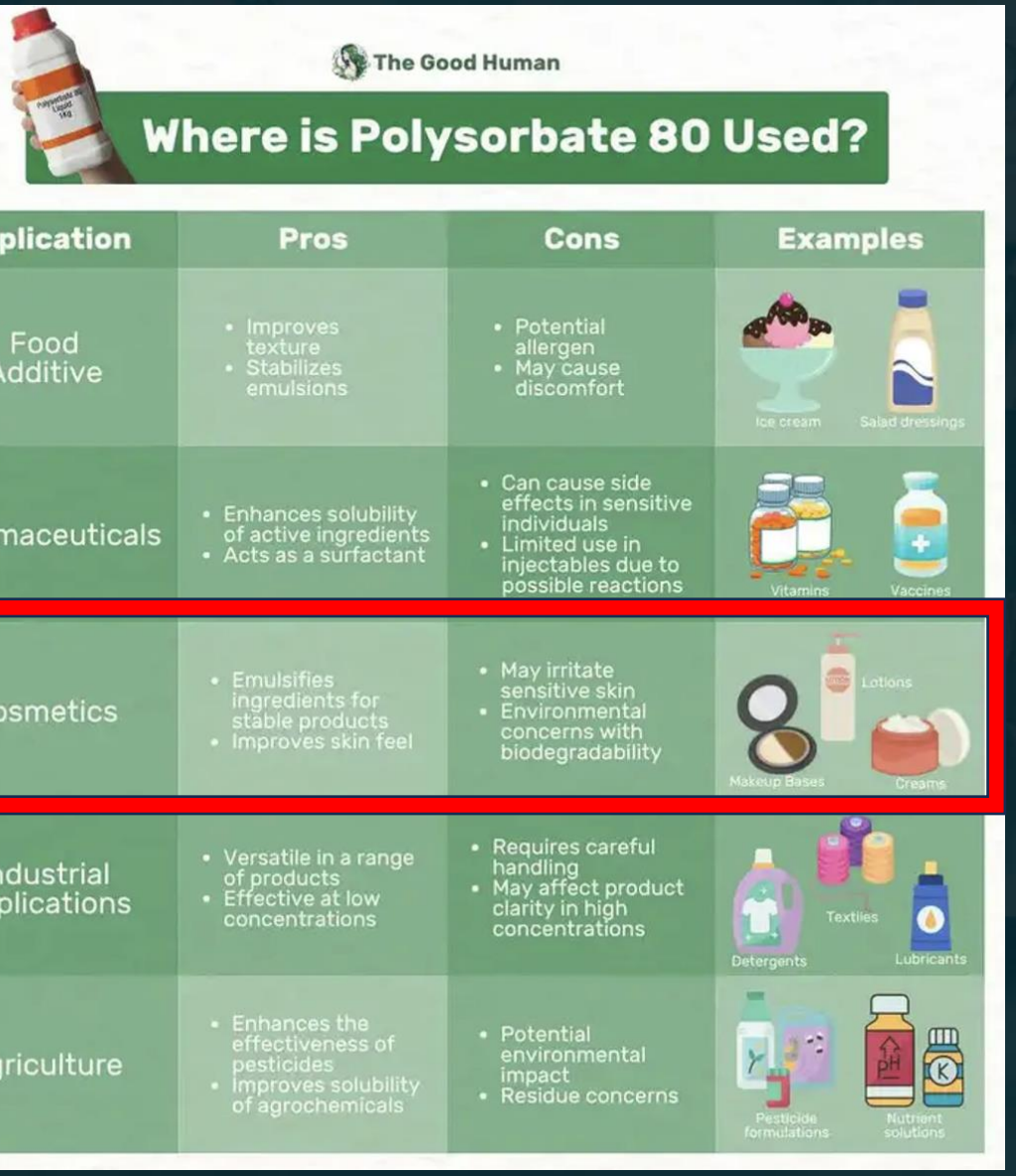

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INCI Beauty

INGREDIENTS SEARCH OPEN ACCESS PROS

INGREDIENTS

POLYSORBATE 80

CAS number: 9005-65-6

"Medium penalty" in all categories.

Origin(s): Synthetic

Other languages: Polisorbat 80, Polisorbato 80, Polissorbato 80, Poliszorbát 80, Polysorbaat 80, Polysorbat 80, Polysorbát 80, Полисорбат 80, 80 بوليسوربات ,80 פוליסורבט, ポリソルベート80, 폴리소르베이트 80

INCI name: POLYSORBATE 80

Classification: Ethoxylated compound, Nonionic surfactant

https://incibeauty.com/en/ingredients/10197-polysorbate-80?utm_source=chatgpt.com

Its functions (INCI)

- *Denaturant :* Makes cosmetics unpleasant. Mainly added to cosmetics containing ethyl alcohol
- *Emulsifying :* Promotes the formation of intimate mixtures between immiscible liquids by modifying the interfacial tension (water and oil)
- *Surfactant :* Reduces the surface tension of cosmetics and contributes to the even distribution of the product when it is used

This ingredient is present in 1.67% of cosmetics.

Styling mousse (8.17%)

Anti-aging night face cream (7.73%)

Primer and foundation (7.14%)

Anti-aging eye contour care (7.03%)

Anti-aging day face cream (6.34%)

https://incibeauty.com/en/ingredients/10197-polysorbate-80?utm_source=chatgpt.com

INCI Beauty

INGREDIENTS SEARCH OPEN ACCESS PROS

Products that contains it

Maybelline

Primer Serum Grippy - 30 ml

12,9 / 20

Cantu

Weightless Daily Leave-In Cream - 8 fl. oz.

6,7 / 20

XX by Revolution

Cloud Complexxion Soft Touch Primer - 24 ml

10,5 / 20

Colgate

VitaPoint Max Fresh Toothpaste Zesty Lemon - 75 ml

8,4 / 20

CeraVe

Intensive Moisturising Lotion for Very Dry Skin - 473 ml

6,3 / 20

Filorga

Time-filler 5XP Correction Cream - All Types of Wrinkles - 50 ml / 1.69 fl. oz.

6,1 / 20

https://incibeauty.com/en/ingredients/10197-polysorbate-80?utm_source=chatgpt.com

INCI Beauty

INGREDIENTS SEARCH OPEN ACCESS PROS

Products that contains it

Paese

Moisturizing Micellar Water - 200 ml

6,4 / 20

Biovène Barcelona

Ceramides Barrier-Boost Glam Sheet Mask with Cica and Hyaluronic Acid - 20 ml

9,7 / 20

Carbon Theory

Supacylic Zap Patch - Salicylic Acid Spot Patches - x20

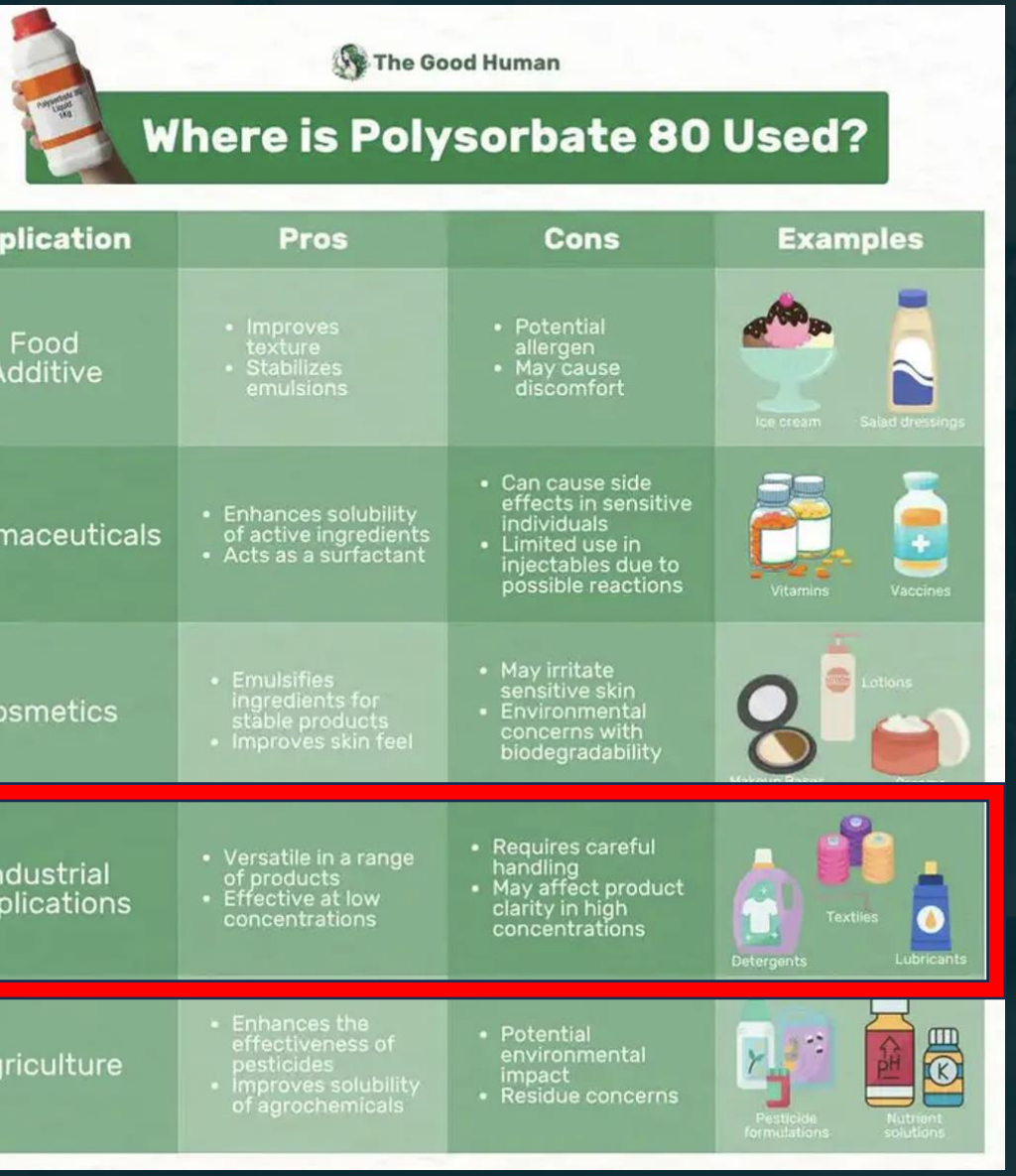
11,4 / 20

La Roche-Posay

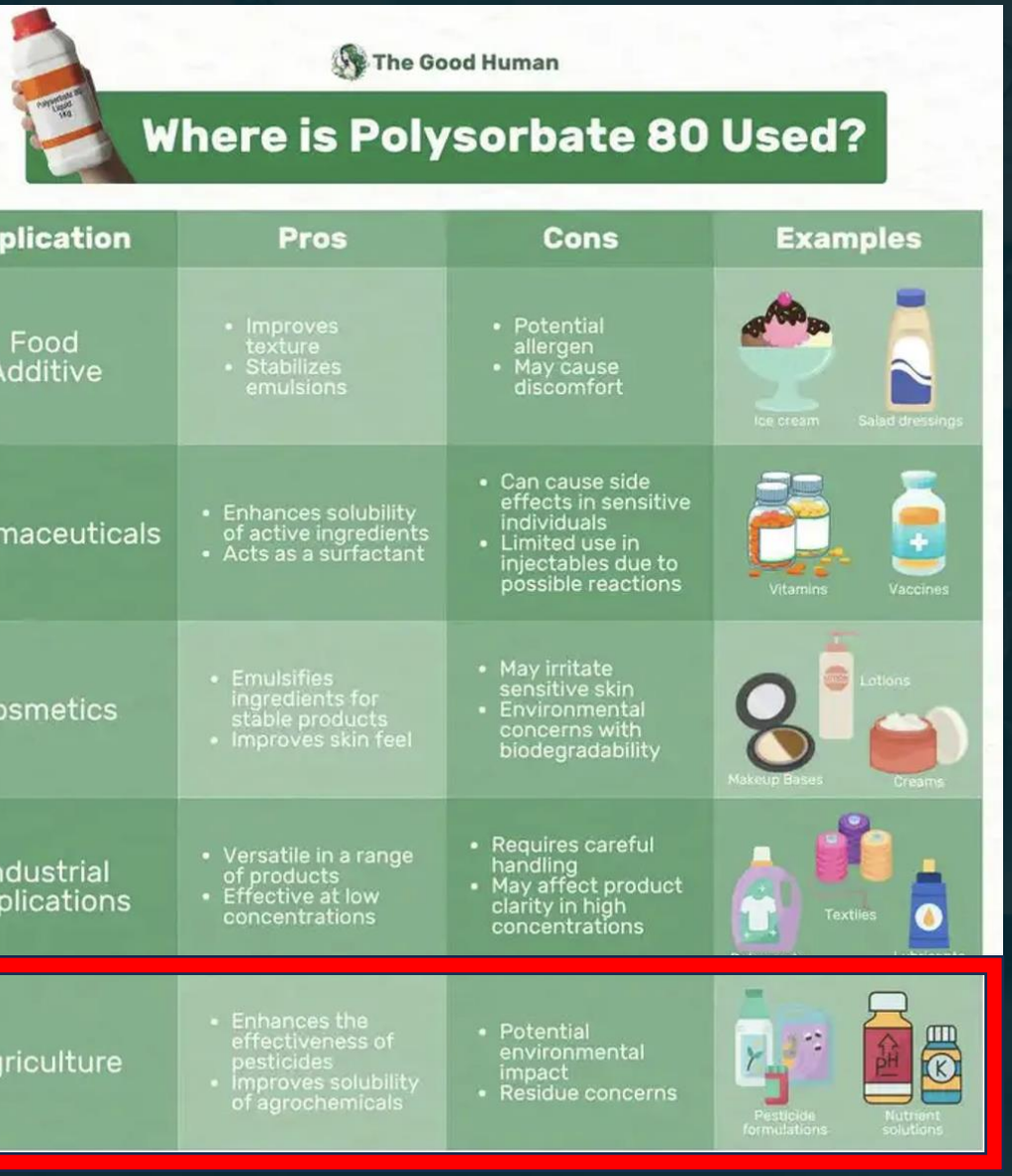
Facial Cream la Roche Posay Effaclar - 40 ml

9,4 / 20

https://incibeauty.com/en/ingredients/10197-polysorbate-80?utm_source=chatgpt.com



https://thegoodhuman.com/what-is-polysorbate-80/



https://thegoodhuman.com/what-is-polysorbate-80/

Table 2 Potential obesogens with possible mechanisms of action and effects.

Potential obesogen	EDC type	Potential mechanisms	Effects	Reference
Alpha naphthoflavone	Pollutant	AhR antagonist, increased expression of hormone-sensitive lipase and the estrogen receptor	Promotes lipid accumulation in adipocytes	(186)
BADGE	Pesticide	PPARγ activator	Induces differentiation of 3T3-L1 preadipocytes and MSCs into adipocytes	(187)
BBP	Pesticide	PPARγ activator	Increased lipid accumulation *in vitro*	(182, 188)
Bisphenol F (BPF)	Plasticizer (BPA analog)	PPARγ activator	Induces differentiation of preadipocytes into adipocytes	(149, 154, 155)
Bisphenol S (BPS)	Plasticizer (BPA analog)	PPARγ activator, upregulates adipogenic mRNA expression levels (i.e. Lipoprotein Lipase, CAAT/enhancer-binding proteins β (C/EBPβ)	Induces differentiation of preadipocytes into adipocytes	(149, 154, 155)
Diazinon	Pesticide	PPARγ activator, activates CCAAT-enhancer binding protein CAAT/ enhancer- binding proteins α (C/EBP α)	Induces differentiation of 3T3-L1 preadipocytes into adipocytes	(189)
Diclofop-methyl	Pesticide	PPARγ activator	Induces adipogenesis in human adipose-derived stromal cells	(75)

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Potential obesogen	EDC type	Potential mechanisms	Effects	Reference
Quinoxyfen	Pesticide	PPARγ activator	Induces adipogenesis in uncommitted mBMSCs, promotes differentiation of 3T3-L1 preadipocytes into adipocytes	(76)
Quizalofop-p-ethyl	Pesticide (herbicide)	Currently unknown	Induces differentiation of 3T3-L1 preadipocytes into adipocytes	(148)
Spirodiclofen	Pesticide	PPARγ activator, promotes expression of adipogenic genes *in vitro*	Induces differentiation of 3T3-L1 preadipocytes and mBMSCs into adipocytes	(76)
Tebupirimfos	Pesticide	Promotes expression of adipogenic genes	Induces differentiation of 3T3-L1 preadipocytes into adipocytes	(76)
Zoxamide	Pesticide	PPARγ activator	Induces differentiation of 3T3-L1 preadipocytes and mBMSCs into adipocytes	(76)

mBMSCs, mouse bone marrow-derived stem cells; PPAR, peroxisome-proliferator activated receptor.

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Verified obesogen	EDC type	Potential mechanisms	Effects	Reference
3-tert-butyl-4-hydroxyanisole (3-BHA)	Food additive (Food preservative)	Phosphorylates cAMP- response element binding protein (CREB)	Induces differentiation of 3T3-L1 preadipocytes into adipocytes, increases lipid plasma levels	(118, 119, 125)
Acrylamide	Byproduct of frying, baking, or roasting	Acts through mitogen-activated protein kinase (MAPK) and adenosine 5′-monophosphate–activated protein kinase–acetyl-CoA carboxylase (AMPK-ACC)	Induces differentiation of 3T3-L1 preadipocytes into adipocytes, increases accumulation of lipid droplets in 3T3-L1 cells	(108)
Bisphenol A (BPA)	Plasticizer	PPARγ activator, interferes with estrogen signaling	Induces differentiation of 3T3-L1 preadipocytes into adipocytes, induces obesity *in vivo*, promotes transgenerational inheritance of obesity	(154, 175, 176)
Carboxylmethylcellulose	Food additive (dietary emulsifier)	PPARγ activator	Induces adipogenesis *in vitro*, induces obesity *in vivo*, disrupts gut microbiome, promotes intestinal inflammation	(114, 115, 118)
Dibutyltin (DBT)	Organotin	PPARγ and RXR activator, induces expression of inflammatory genes	Induces differentiation of 3T3-L1 preadipocytes and MSCs into adipocytes, induces insulin resistance	(158, 160, 161)
p,p-dichlorodiphenyldichloroethylene (DDE)	Pesticide (metabolite of DDT)	Currently unknown	Induces differentiation of 3T3-L1 preadipocytes into adipocytes, induces obesity *in vivo*	(145, 177, 178)
Dichlorodiphenyltrichloroethane (DDT)	Pesticide	Currently unknown	Impairs thermogenesis in brown adipose tissue (BAT), promotes diet induced insulin resistance, promotes transgenerational inheritance of obesity	(98, 100, 143)
di-2-ethylhexyl (DEHP)	Phthalates	Promotes expression of adipogenic genes	Increases adipogenesis and lipid accumulation *in vitro*, induces obesity *in vivo*	(97, 179, 180, 181, 182, 183)
Dioctyl sodium sulfosuccinate (DOSS)	Food additive (dietary emulsifier, surfactant)	PPARγ activator	Induces differentiation of 3T3-L1 preadipocytes into adipocytes, induces obesity *in vivo*	(114, 118)
Glyphosate	Pesticide (herbicide)	Currently unknown	Promotes transgenerational inheritance of obesity	(101)
Imidacloprid	Pesticide (insecticide)	Alters regulation of AMP-activated protein kinase-α (AMPKα), alters genes regulating glucose metabolism (i.e. GLUT4, PDK4)	Induces differentiation of 3T3-L1 preadipocytes into adipocytes and insulin resistance after exposure to high-fat diet	(146, 147)
Mono-2-ethylhexyl (MEHP)	Phthalates	PPARγ activator	Increases adipogenesis and lipid accumulation *in vitro*, induces obesity *in vivo*	(179, 180, 182, 184)
Monosodium glutamate (MSG)	Food additive (flavor enhancer)	Antagonizes androgen receptor action and/or impairs secretion of glucagon-like peptide-1	Induces differentiation of 3T3-L1 preadipocytes into adipocytes	(125, 126)

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NBC NEWS

A potentially cancer-causing chemical is sprayed on much of America's farmland. Here is where

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NEWS

A potentially cancer-causing chemical is sprayed on much of America's farmland. Here is where it is used the most.

Weedkillers containing glyphosate are sprayed on nearly half of all corn and soybeans grown in the U.S. Use is highest in parts of Iowa, Illinois and Indiana.

https://www.nbcnews.com/data-graphics/toxic-herbicides-map-showing-high-use-state-rcna50052

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Oct. 10, 2022, 4:28 PM CDT / Updated Oct. 28, 2022, 1:59 PM CDT

By Danica Jefferies

Every day, farms across the country use a potentially cancer-causing chemical that is in the world's most common weedkillers. And data shows that it's most used in the Midwest and parts of the South.

Glyphosate, the active ingredient in many herbicides, has been in use for nearly 50 years.The chemical's health impacts have for years been heavily debated in studies, U.S. and international regulatory filings and in lawsuits filed after the the World Health Organization's International Agency for Research on Cancer concluded in a 2015 report that the chemical "is probably carcinogenic to humans." The Environmental Protection Agency has maintained that there is no risk to human health based on current uses and that there is no evidence glyphosate causes cancer. Bayer, the pharmaceutical company that sells the most widely used glyphosate herbicide, says it stands by the safety of the chemical.

https://www.nbcnews.com/data-graphics/toxic-herbicides-map-showing-high-use-state-rcna50052

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Glyphosate's main use is in agriculture. Weedkillers containing it are used on nearly half of all planted acres of corn and soybeans in the U.S., though much of those are not grown for human consumption. They're also used on acres of farmland where wheat, oats, fruits and cotton are grown. Pesticide residue testing from the FDA found glyphosate residues on a wide variety of crops, including oats, soybeans, cranberries, grapes, raisins, oranges, apples, cherries and beans. Data from the U.S. Geological Survey shows several counties across the country with higher than average glyphosate usage.

https://www.nbcnews.com/data-graphics/toxic-herbicides-map-showing-high-use-state-rcna50052

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Glyphosate usage in the U.S.

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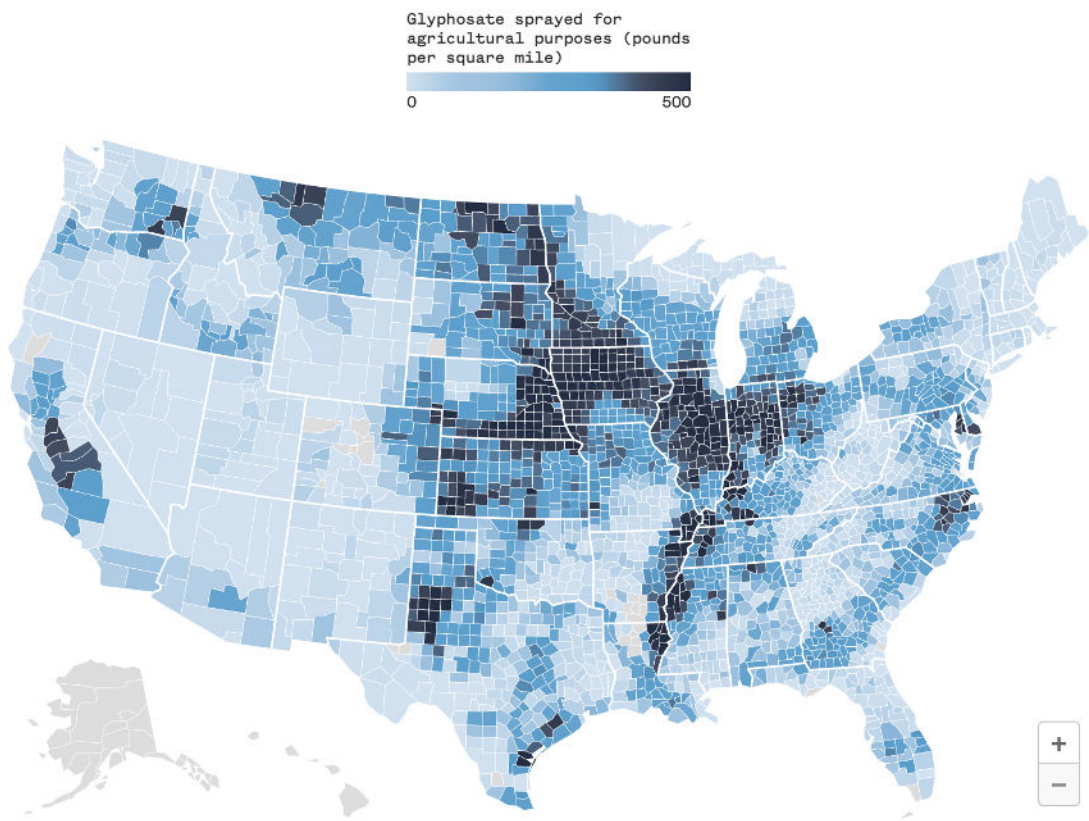

Notes: Usage was not reported in the counties colored gray.
Source: U.S. Geological Survey
Graphic: Danica Jefferies / NBC News

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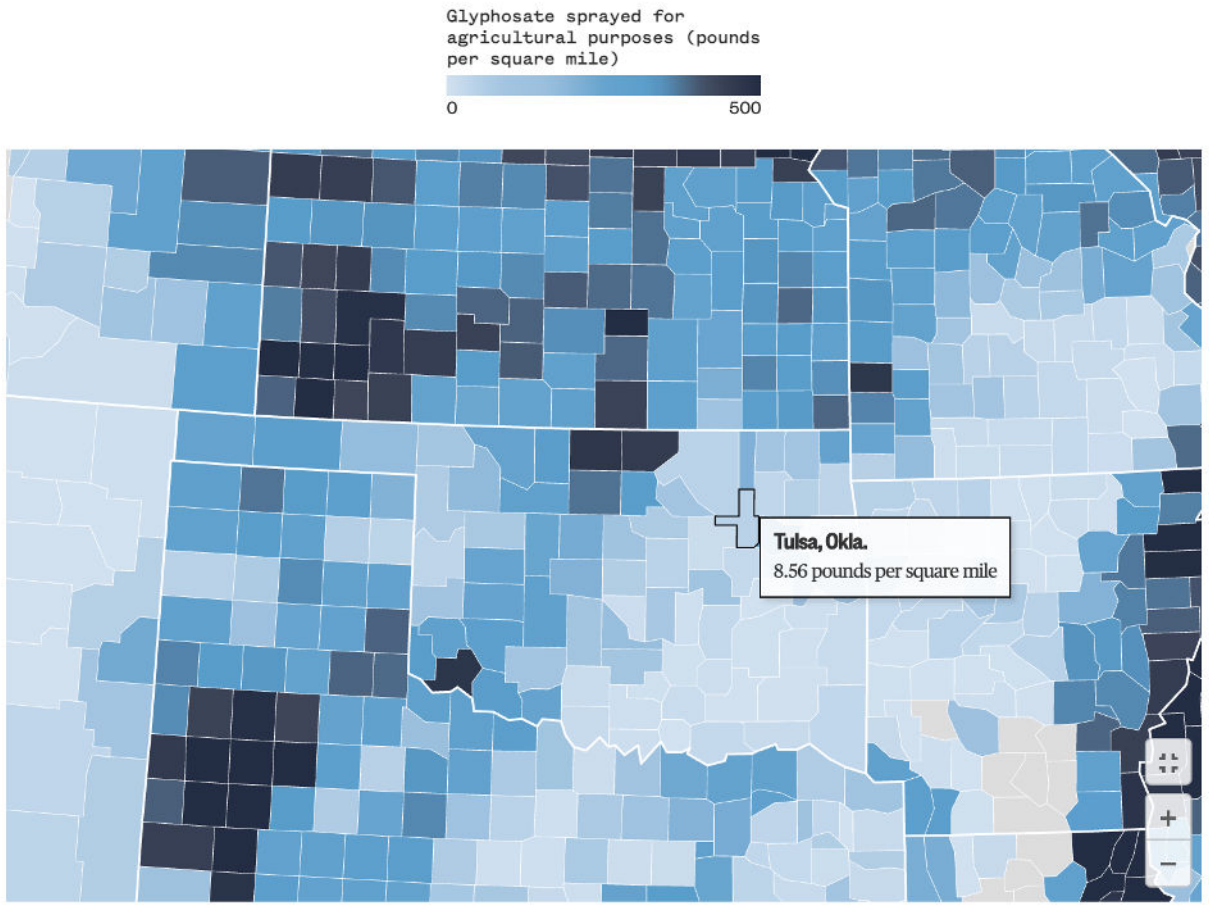

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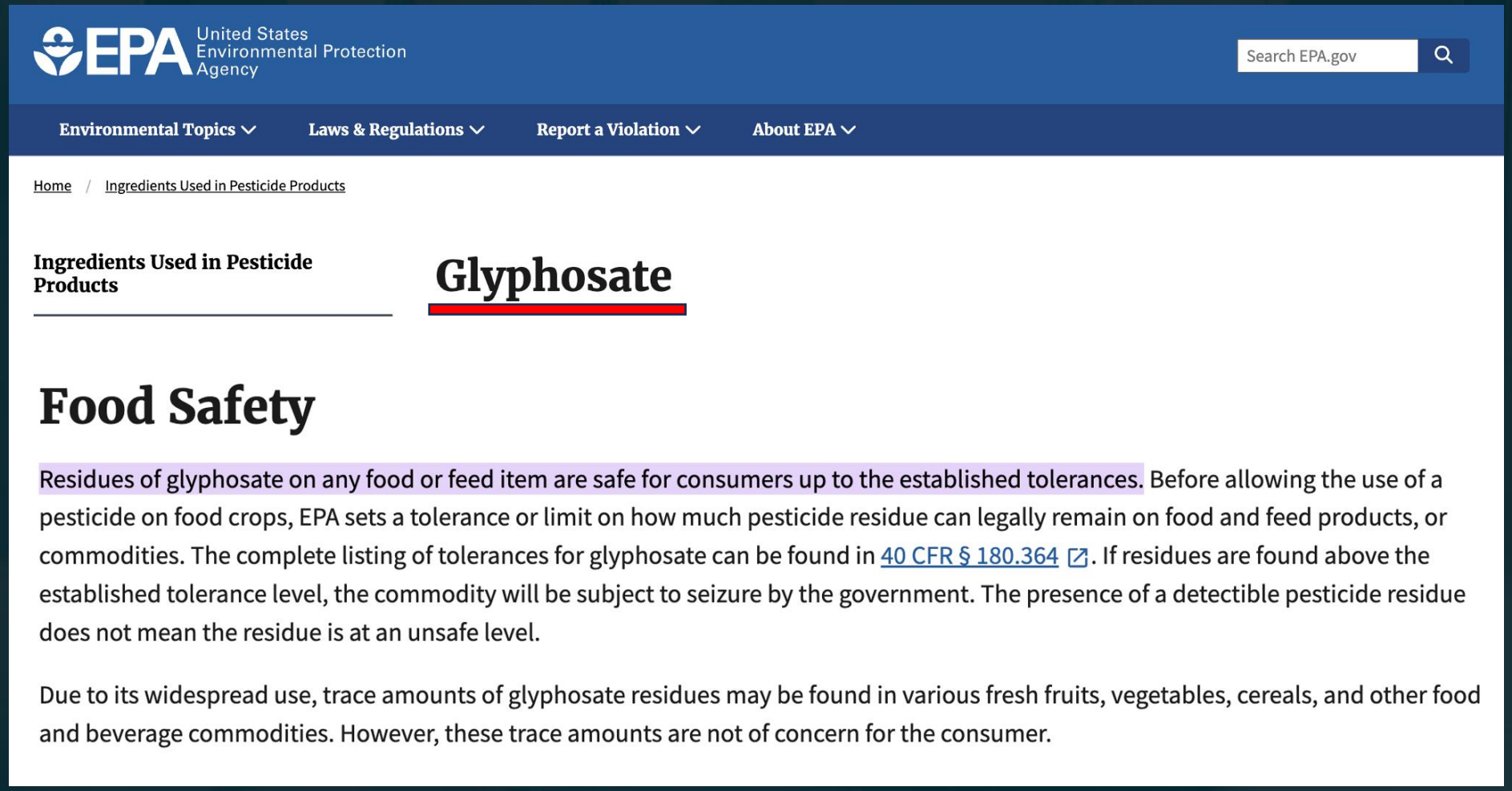

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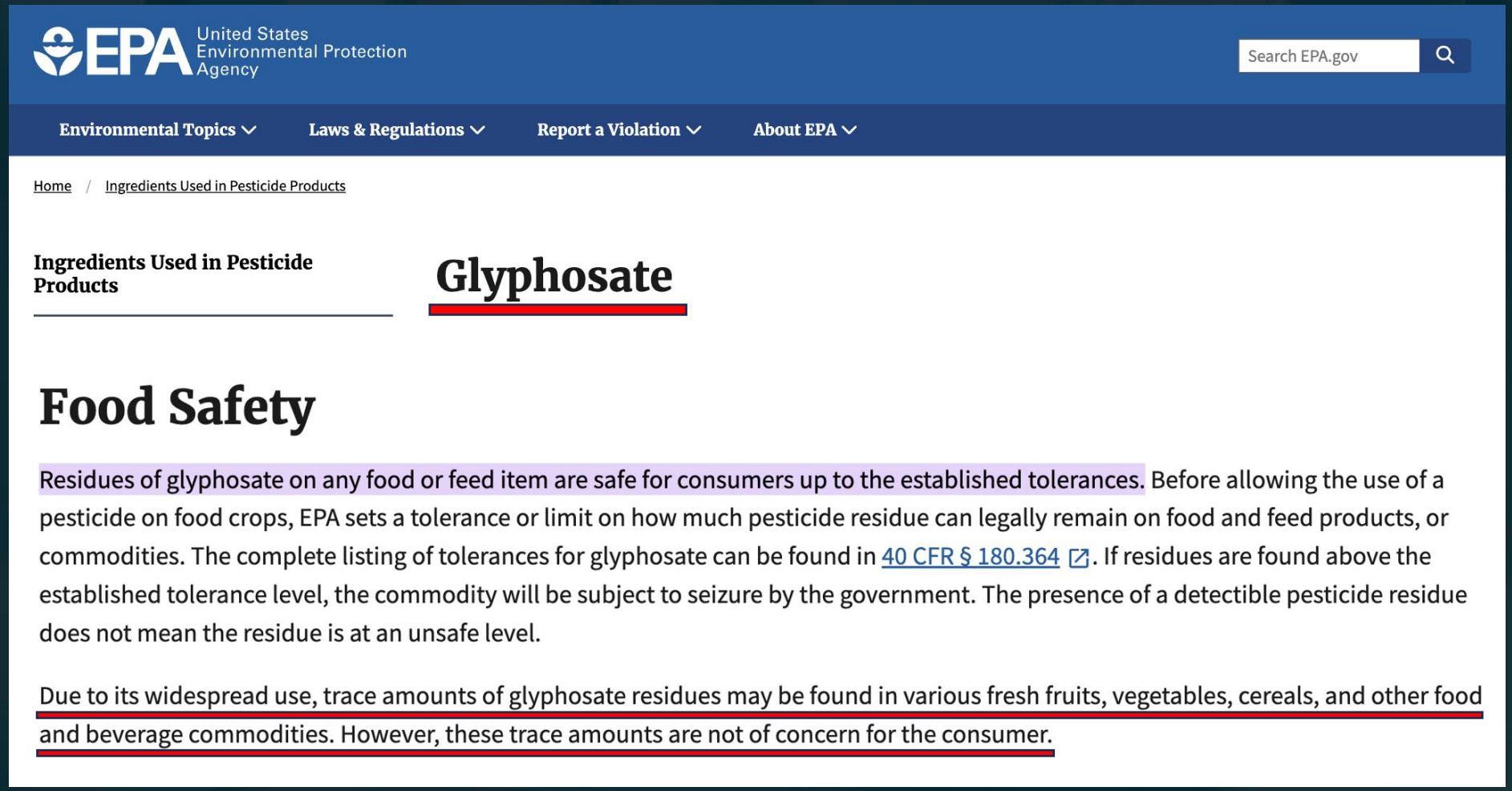

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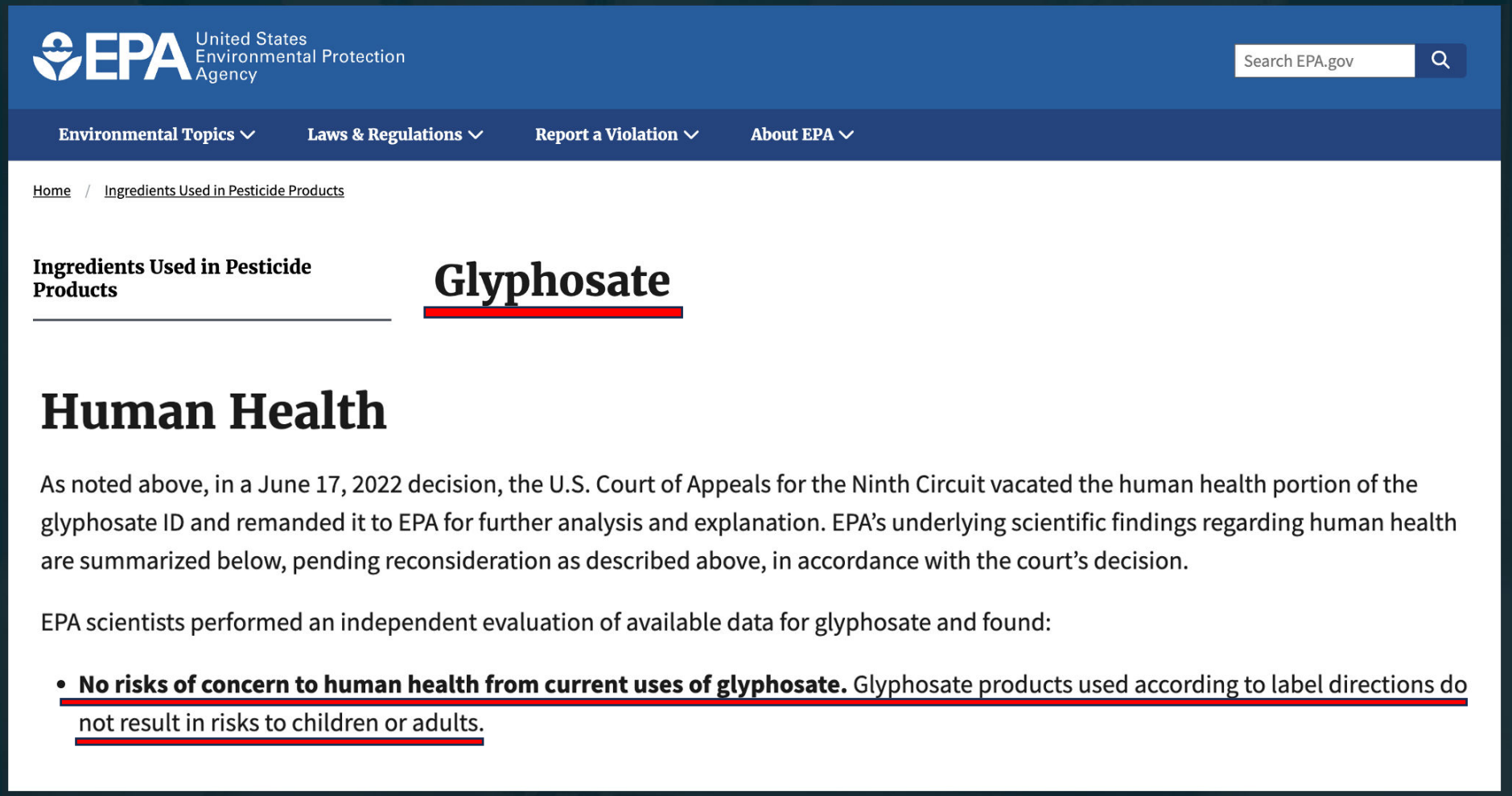

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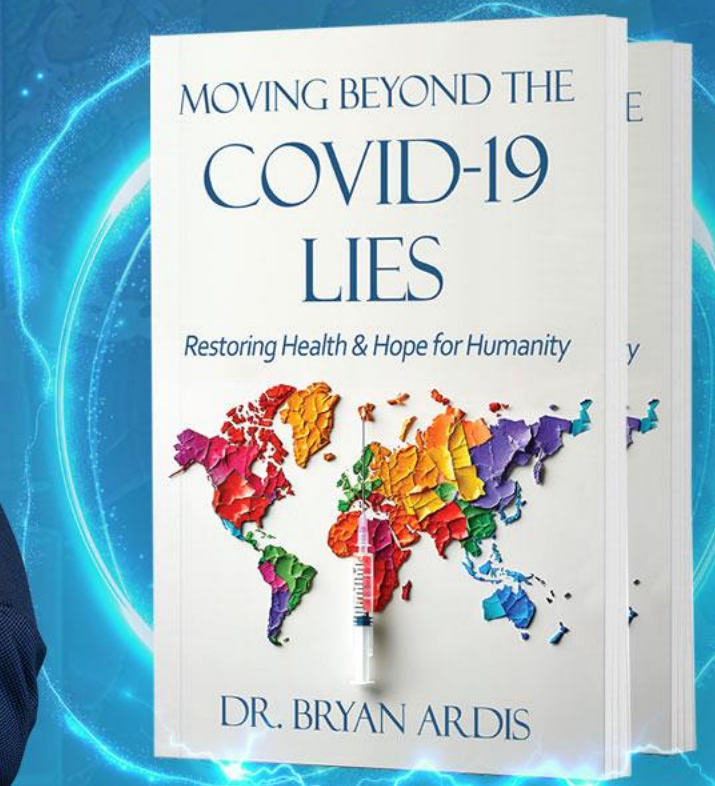

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