SECTION-1: Identification of the substance / mixture and the company / undertaking

Catalogue Number	CS-DB-00132
Product Name	tert-Butyl Hydroperoxide
CAS No.	75-91-2
Category	Reagents
Synonyms	2-hydroperoxy-2-methylpropane
Brand	Clearsynth Labs Ltd.
Identified uses	Laboratory Chemicals
Uses advised against	Not available
Company	Clearsynth Labs Ltd. Mumbai, India
Emergency Phone #	+91-22-245045900
REACH No.	Not available

SECTION 2: Hazards identification

Disclaimer: This is sample MSDS. Please email **sales@clearsynth.com** for more details.

2.1 Classification of the substance or mixture-Regulation (EC) No 1272/2008:

Acute toxicity (Category 4)

2.2 Label Elements

Signal Word: Warning

Hazard Statement(s)

Code	Statement
H341	Not available
H226	Not available
H242	Not available
H301	Not available

H302	Harmful if swallowed.
H311	Not available
H312	Harmful in contact with skin.
H314	Not available
H317	May cause an allergic skin reaction.
H318	Causes serious eye damage.
H330	Not available
H332	Harmful if inhaled.
H335	Not available
H411	Toxic to aquatic life with long lasting effects.
H350	Not available
H401	Not available
H225	Not available
H336	Not available
H370	Not available
H371	Not available
H240	Not available
H331	Not available
H372	Not available
H373	Not available

Precautionary Statement(s)

Code	Statement
P203	Not available
P280	Wear protective gloves/protective clothing/eye protection/face protection.
P318	Not available
P405	Store locked up.
P501	Dispose of contents/container in accordance with local/regional/national/international regulatio
P210	Not available
P233	Not available

P234	Not available
P235	Not available
P240	Not available
P241	Not available
P242	Not available
P243	Not available
P260	Not available
P261	Avoid breathing dust/fume/gas/mist/vapours/spray.
P262	Not available
P264	Wash hands thoroughly after handling.
P264+P265	Not available
P270	Not available
P271	Use only outdoors or in a well-ventilated area.
P272	Not available
P273	Not available
P284	Not available
P301+P316	Not available
P301+P317	Not available
P301+P330+P331	Not available
P302+P352	IF ON SKIN: Wash with plenty of water and soap.
P302+P361+P354	Not available
P303+P361+P353	Not available
P304+P340	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P305+P354+P338	Not available
P316	Not available
P317	Not available
P319	Get medical help if you feel unwell.
P320	Not available
P321	Specific treatment (see … on this label).
P330	Not available

P333+P317	Not available
P361+P364	Not available
P362+P364	Take off contaminated clothing and wash it before reuse.
P363	Not available
P370+P378	Not available
P391	Not available
P403	Not available
P403+P233	Store in a well-ventilated place. Keep container tightly closed.
P403+P235	Not available
P410	Not available
P411	Not available
P420	Not available
P308+P316	Not available
P370+P372+P380+P373	Not available

SECTION 3: Composition / information on ingredients

3.1 Substance

Component : tert-Butyl Hydroperoxide
CAS Number : 75-91-2
Molecular Formula : C4H10O2
Molecular Weight : 90.12
Parent Chemical : Not available
Synonyms : 2-hydroperoxy-2-methylpropane
Concentration : Not available

SECTION 4: First aid measures

SECTION 4: First-aid measures

4.1 Description of first aid measures
General advice: Remove contaminated clothing and shoes. Seek medical attention if symptoms persist or are severe.
Inhalation: Move person to fresh air. Keep at rest. If breathing is difficult, seek medical attention.
Skin contact: Wash immediately with plenty of water and soap. Seek medical attention if irritation, burns, or symptoms occur.
Eye contact: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing. Seek immediate medical attention.

Ingestion: Rinse mouth. Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Seek immediate medical attention.

4.2 Most important symptoms and effects, both acute and delayed
May cause irritation and/or burns. Additional symptoms/effects: Not available.

4.3 Indication of any immediate medical attention and special treatment needed
Treat symptomatically. Special treatment: Not available.

SECTION 5: Firefighting measures

SECTION 5: Fire-fighting measures

5.1 Extinguishing media
Suitable extinguishing media: Use extinguishing measures appropriate to surrounding fire.
Unsuitable extinguishing media: Not available.

5.2 Special hazards arising from the substance or mixture
Organic peroxide/oxidizing organic liquid; may intensify fire. Containers may rupture when heated. Hazardous combustion products: Not available.

5.3 Advice for firefighters
Wear self-contained breathing apparatus (SCBA) and full protective gear. Cool containers with water spray from a safe distance. Fight fire from a protected location. Prevent firefighting water from entering drains and waterways.

SECTION 6: Accidental release measures

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures
Evacuate unnecessary personnel. Provide adequate ventilation. Avoid breathing vapors/mist. Avoid contact with skin and eyes. Remove all ignition sources and incompatible materials.

6.2 Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not allow to enter drains, surface water, or soil.

6.3 Methods and material for containment and cleaning up
Contain spill with inert absorbent material. Collect in suitable, closed containers for disposal. Do not return spilled material to original container. Decontaminate spill area after material pickup.

6.4 Reference to other sections
See Section 8 for personal protective equipment and Section 13 for disposal considerations.

SECTION-7: Handling and storage

SECTION 7: Handling and storage

7.1 Precautions for safe handling
Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes, and clothing. Avoid breathing vapors/mist. Use only with adequate ventilation. Keep away from heat, sparks, open flames, and other ignition sources. Avoid contamination.

7.2 Conditions for safe storage, including any incompatibilities

Store in a cool, well-ventilated place. Keep container tightly closed. Protect from heat and direct sunlight. Store away from incompatible materials (e.g., reducing agents, combustible materials, acids/bases, metals, and other reactive chemicals). Specific storage temperature: Not available.

7.3 Specific end use(s)
Reagent. Specific uses: Not available.

SECTION 8: Exposure controls / personal protection

SECTION 8: Exposure controls/personal protection

8.1 Control parameters
Occupational exposure limits: Not available.
Biological limit values: Not available.

8.2 Exposure controls
Engineering controls: Use local exhaust ventilation or general ventilation to maintain exposure below applicable limits.
Personal protective equipment (PPE):
- Eye/face protection: Safety goggles and/or face shield as appropriate.
- Skin protection: Chemical-resistant gloves; protective clothing as appropriate.
- Respiratory protection: If ventilation is inadequate, use appropriate respiratory protection.
- Hygiene measures: Wash hands thoroughly after handling. Remove contaminated clothing and wash before reuse.

SECTION 9: Physical and chemical properties

9.1 Information on basic physical and chemical properties

Test	Result
Appearance	No data available
IR spectrum	No data available
pH	No data available
Solubility	No data available

Property	Value
a) Physical State	No data available
b) Color	No data available
c) Odor	No data available
d) pH	No data available
e) Vapour Pressure	No data available

Property	Value
f) Viscosity	No data available
g) Initial Boiling Point and boiling range	No data available
h) Melting Point / Freezing Point	No data available
i) Auto Ignition Temperature	No data available
j) Flash Point	No data available
k) Explosion Limit, Lower	No data available
l) Explosion Limit, Upper	No data available
m) Decomposition Temperature	No data available
n) Loss on Drying	No data available
o) Relative Density	No data available
p) Solubility (in DMSO)	No data available
q) Oxidizing Properties	No data available

SECTION 10: Stability and reactivity

SECTION 10: Stability and reactivity

10.1 Reactivity
Reactive oxidizing organic liquid; may react vigorously with incompatible materials. Further information: Not available.

10.2 Chemical stability
Not available.

10.3 Possibility of hazardous reactions
May undergo hazardous decomposition under certain conditions (e.g., heat, contamination). Additional information: Not available.

10.4 Conditions to avoid
Heat, flames, sparks, direct sunlight, contamination, and other ignition sources.

10.5 Incompatible materials
Reducing agents, combustible/organic materials, acids, bases, metals, and other incompatible/reactive chemicals. Detailed incompatibilities: Not available.

10.6 Hazardous decomposition products
Not available.

SECTION 11: Toxicological information

11.1 Information on toxicological effects

- Acute toxicity: IDENTIFICATION AND USE: tert-Butyl Hydroperoxide is a water-white liquid. It is used to introduce peroxy group into organic molecules, as a reagent in radical substitution reactions, and catalyst in polymerization reactions. HUMAN STUDIES: The main toxic effect of most peroxides is irritation of skin, mucous membranes and eyes. Prolonged or intense skin contact or splashes in the eyes may cause severe injury. Some organic peroxide vapors are irritating and may also cause headaches, intoxication similar to alcohol, and lung edema if inhaled in high concentrations. Some are skin sensitizers. Hydroperoxides are extremely irritating and corrosive to the eyes, with risk of blindness, and may cause serious injury or death if ingested in sufficient quantity. tert-Butyl hydroperoxide induced DNA lesions in human liver cells, and stimulated activity of superoxide dismutase and mainly glutathione peroxidase. A slight increase in the gene expression of Cu/Zn superoxide dismutase and catalase with 500 uM tert-butyl hydroperoxide and of catalase with 200 uM hydrogen peroxide was observed in HepG2 cells in culture. tert-Butyl hydroperoxide has been demonstrated to induce apoptosis in hepatoma cell line HepG2. ANIMAL STUDIES: When tested as a 75% solution in dimethylphthalate by application of two drops to rabbit eyes, it caused injury graded 5 on a scale of 0 to 7. A drop of 35% solution in propylene glycol caused a reaction graded between 46 and 79 on a scale of 0 to 100, persisting at least a week. A 7% solution in the same solvent was the maximum which could be tolerated without significant irritation. In a routine primary skin irritation assay, three out of six rabbits died. The peroxide is a severe dermal irritant. It can also be absorbed through the skin in toxic amounts to cause cyanosis, depression, loss of righting, blanching of the treated skin, convulsions, and death. In male rats serum hepatotoxicity parameters were increased from 2 hr following 1 mmol/kg tert-butyl hydroperoxide and reached their maximum values at 8 hr. In rats, injection of tert-butyl hydroperoxide into common bile-pancreatic duct induces acute necrotizing pancreatitis. In mice, tert-butyl hydroperoxide alters the miRNA expression profile of testis which might play a potential role in oxidative and antioxidative responses and spermatogenesis. In cultured mouse dorsal root ganglion neurons tert-butyl hydroperoxide inhibited axonal transport via lipid peroxidation along with degenerative changes in organelles. tert-Butyl hydroperoxide was tested for the induction of sex-linked recessive lethal mutations in Drosophila melanogaster. It was positive at a dose of 2,000 ppm when administered to males by feeding in this assay. In vivo experiment showed no mutagenesis in the bone marrow cells after rats inhaled 100 ppm for 6 hr/day for 5 days. ECOTOXICITY STUDIES: The effects of tert-butyl hydroperoxide on hepatic transcriptome expression patterns of the teleost fish Lithognathus mormyrus were studied. The effects were demonstrated by leukocyte infiltration into the liver and by differential expression of various genes, some already known to be involved in oxidative stress responses. LC50 (rat) = 460 ppm/4H
- Skin corrosion/irritation: IDENTIFICATION AND USE: tert-Butyl Hydroperoxide is a water-white liquid. It is used to introduce peroxy group into organic molecules, as a reagent in radical substitution reactions, and catalyst in polymerization reactions. HUMAN STUDIES: The main toxic effect of most peroxides is irritation of skin, mucous membranes and eyes. Prolonged or intense skin contact or splashes in the eyes may cause severe injury. Some organic peroxide vapors are irritating and may also cause headaches, intoxication similar to alcohol, and lung edema if inhaled in high concentrations. Some are skin sensitizers. Hydroperoxides are extremely irritating and corrosive to the eyes, with risk of blindness, and may cause serious injury or death if ingested in sufficient quantity. tert-Butyl hydroperoxide induced DNA lesions in human liver cells, and stimulated activity of superoxide dismutase and mainly glutathione peroxidase. A slight increase in the gene expression of Cu/Zn superoxide dismutase and catalase with 500 uM tert-butyl hydroperoxide and of catalase with 200 uM hydrogen peroxide was observed in HepG2 cells in culture. tert-Butyl hydroperoxide has been demonstrated to induce apoptosis in hepatoma cell line HepG2. ANIMAL STUDIES: When tested as a 75% solution in dimethylphthalate by application of two drops to rabbit eyes, it caused injury graded 5 on a scale of 0 to 7. A drop of 35% solution in propylene glycol caused a reaction graded between 46 and 79 on a scale of 0 to 100, persisting at least a week. A 7% solution in the same solvent was the maximum which could be tolerated without significant irritation. In a routine primary skin irritation assay, three out of six rabbits died. The peroxide is a severe dermal irritant. It can also be absorbed through the skin in toxic amounts to cause cyanosis, depression, loss of righting, blanching of the treated skin, convulsions, and

death. In male rats serum hepatotoxicity parameters were increased from 2 hr following 1 mmol/kg tert-butyl hydroperoxide and reached their maximum values at 8 hr. In rats, injection of tert-butyl hydroperoxide into common bile-pancreatic duct induces acute necrotizing pancreatitis. In mice, tert-butyl hydroperoxide alters the miRNA expression profile of testis which might play a potential role in oxidative and antioxidative responses and spermatogenesis. In cultured mouse dorsal root ganglion neurons tert-butyl hydroperoxide inhibited axonal transport via lipid peroxidation along with degenerative changes in organelles. tert-Butyl hydroperoxide was tested for the induction of sex-linked recessive lethal mutations in Drosophila melanogaster. It was positive at a dose of 2,000 ppm when administered to males by feeding in this assay. In vivo experiment showed no mutagenesis in the bone marrow cells after rats inhaled 100 ppm for 6 hr/day for 5 days. ECOTOXICITY STUDIES: The effects of tert-butyl hydroperoxide on hepatic transcriptome expression patterns of the teleost fish Lithognathus mormyrus were studied. The effects were demonstrated by leukocyte infiltration into the liver and by differential expression of various genes, some already known to be involved in oxidative stress responses. /SIGNS AND SYMPTOMS/ The main toxic effect of most peroxides is irritation of skin, mucous membranes and eyes. Prolonged or intense skin contact or splashes in the eyes may cause severe injury. Some organic peroxide vapors are irritating and may also cause headaches, intoxication similar to alcohol, and lung edema in inhaled in high concentrations. Some are ... skin sensitizers. Dialkyl peroxides are generally not as strongly irritating, and the diacyl peroxides are the least irritating of the peroxides. Hydroperoxides, peroxyacids and particularly methyl ethyl ketone peroxide are much more severe. They are extremely irritating and corrosive to the eyes, with risk of blindness, and may cause serious injury or death if ingested in sufficient quantity. /Peroxides, Organic and Inorganic/

- Serious eye damage/eye irritation: No data available.
- Respiratory or skin sensitization: IDENTIFICATION AND USE: tert-Butyl Hydroperoxide is a water-white liquid. It is used to introduce peroxy group into organic molecules, as a reagent in radical substitution reactions, and catalyst in polymerization reactions. HUMAN STUDIES: The main toxic effect of most peroxides is irritation of skin, mucous membranes and eyes. Prolonged or intense skin contact or splashes in the eyes may cause severe injury. Some organic peroxide vapors are irritating and may also cause headaches, intoxication similar to alcohol, and lung edema if inhaled in high concentrations. Some are skin sensitizers. Hydroperoxides are extremely irritating and corrosive to the eyes, with risk of blindness, and may cause serious injury or death if ingested in sufficient quantity. tert-Butyl hydroperoxide induced DNA lesions in human liver cells, and stimulated activity of superoxide dismutase and mainly glutathione peroxidase. A slight increase in the gene expression of Cu/Zn superoxide dismutase and catalase with 500 uM tert-butyl hydroperoxide and of catalase with 200 uM hydrogen peroxide was observed in HepG2 cells in culture. tert-Butyl hydroperoxide has been demonstrated to induce apoptosis in hepatoma cell line HepG2. ANIMAL STUDIES: When tested as a 75% solution in dimethylphthalate by application of two drops to rabbit eyes, it caused injury graded 5 on a scale of 0 to 7. A drop of 35% solution in propylene glycol caused a reaction graded between 46 and 79 on a scale of 0 to 100, persisting at least a week. A 7% solution in the same solvent was the maximum which could be tolerated without significant irritation. In a routine primary skin irritation assay, three out of six rabbits died. The peroxide is a severe dermal irritant. It can also be absorbed through the skin in toxic amounts to cause cyanosis, depression, loss of righting, blanching of the treated skin, convulsions, and death. In male rats serum hepatotoxicity parameters were increased from 2 hr following 1 mmol/kg tert-butyl hydroperoxide and reached their maximum values at 8 hr. In rats, injection of tert-butyl hydroperoxide into common bile-pancreatic duct induces acute necrotizing pancreatitis. In mice, tert-butyl hydroperoxide alters the miRNA expression profile of testis which might play a potential role in oxidative and antioxidative responses and spermatogenesis. In cultured mouse dorsal root ganglion neurons tert-butyl hydroperoxide inhibited axonal transport via lipid peroxidation along with degenerative changes in organelles. tert-Butyl hydroperoxide was tested for the induction of sex-linked recessive lethal mutations in Drosophila melanogaster. It was positive at a dose of 2,000 ppm when administered to males by feeding in this assay. In vivo experiment showed no mutagenesis in the bone marrow cells after rats inhaled 100 ppm for 6 hr/day for 5 days. ECOTOXICITY STUDIES: The effects of tert-butyl

hydroperoxide on hepatic transcriptome expression patterns of the teleost fish Lithognathus mormyrus were studied. The effects were demonstrated by leukocyte infiltration into the liver and by differential expression of various genes, some already known to be involved in oxidative stress responses. /SIGNS AND SYMPTOMS/ The main toxic effect of most peroxides is irritation of skin, mucous membranes and eyes. Prolonged or intense skin contact or splashes in the eyes may cause severe injury. Some organic peroxide vapors are irritating and may also cause headaches, intoxication similar to alcohol, and lung edema in inhaled in high concentrations. Some are ... skin sensitizers. Dialkyl peroxides are generally not as strongly irritating, and the diacyl peroxides are the least irritating of the peroxides. Hydroperoxides, peroxyacids and particularly methyl ethyl ketone peroxide are much more severe. They are extremely irritating and corrosive to the eyes, with risk of blindness, and may cause serious injury or death if ingested in sufficient quantity. /Peroxides, Organic and Inorganic/
- Germ cell mutagenicity: IDENTIFICATION AND USE: tert-Butyl Hydroperoxide is a water-white liquid. It is used to introduce peroxy group into organic molecules, as a reagent in radical substitution reactions, and catalyst in polymerization reactions. HUMAN STUDIES: The main toxic effect of most peroxides is irritation of skin, mucous membranes and eyes. Prolonged or intense skin contact or splashes in the eyes may cause severe injury. Some organic peroxide vapors are irritating and may also cause headaches, intoxication similar to alcohol, and lung edema if inhaled in high concentrations. Some are skin sensitizers. Hydroperoxides are extremely irritating and corrosive to the eyes, with risk of blindness, and may cause serious injury or death if ingested in sufficient quantity. tert-Butyl hydroperoxide induced DNA lesions in human liver cells, and stimulated activity of superoxide dismutase and mainly glutathione peroxidase. A slight increase in the gene expression of Cu/Zn superoxide dismutase and catalase with 500 uM tert-butyl hydroperoxide and of catalase with 200 uM hydrogen peroxide was observed in HepG2 cells in culture. tert-Butyl hydroperoxide has been demonstrated to induce apoptosis in hepatoma cell line HepG2. ANIMAL STUDIES: When tested as a 75% solution in dimethylphthalate by application of two drops to rabbit eyes, it caused injury graded 5 on a scale of 0 to 7. A drop of 35% solution in propylene glycol caused a reaction graded between 46 and 79 on a scale of 0 to 100, persisting at least a week. A 7% solution in the same solvent was the maximum which could be tolerated without significant irritation. In a routine primary skin irritation assay, three out of six rabbits died. The peroxide is a severe dermal irritant. It can also be absorbed through the skin in toxic amounts to cause cyanosis, depression, loss of righting, blanching of the treated skin, convulsions, and death. In male rats serum hepatotoxicity parameters were increased from 2 hr following 1 mmol/kg tert-butyl hydroperoxide and reached their maximum values at 8 hr. In rats, injection of tert-butyl hydroperoxide into common bile-pancreatic duct induces acute necrotizing pancreatitis. In mice, tert-butyl hydroperoxide alters the miRNA expression profile of testis which might play a potential role in oxidative and antioxidative responses and spermatogenesis. In cultured mouse dorsal root ganglion neurons tert-butyl hydroperoxide inhibited axonal transport via lipid peroxidation along with degenerative changes in organelles. tert-Butyl hydroperoxide was tested for the induction of sex-linked recessive lethal mutations in Drosophila melanogaster. It was positive at a dose of 2,000 ppm when administered to males by feeding in this assay. In vivo experiment showed no mutagenesis in the bone marrow cells after rats inhaled 100 ppm for 6 hr/day for 5 days. ECOTOXICITY STUDIES: The effects of tert-butyl hydroperoxide on hepatic transcriptome expression patterns of the teleost fish Lithognathus mormyrus were studied. The effects were demonstrated by leukocyte infiltration into the liver and by differential expression of various genes, some already known to be involved in oxidative stress responses. /GENOTOXICITY/ This paper presents comparisons of biological impacts of the oxidants H2O2 and t-BHP on human liver cells, and shows modulation of these effects by the phenolic compound carvacrol. To understand better how these oxidants exert their effect on DNA and on the activity of the enzymes superoxide dismutase (SOD) and glutathione peroxidase (GPx), we measured intracellular antioxidant glutathione (iGSH) and intracellular reactive oxidative species (iROS). DNA lesions corresponded to single-strand DNA breaks, alkali-labile lesions and formamido-pyrimidine-DNA-glycosylase (FPG)-sensitive sites. Pre-treatment of cells with carvacrol substantially decreased the number of H2O2-induced DNA lesions, but the number of t-BHP-induced DNA lesions was not reduced. Activities of both SOD and GPx were

stimulated significantly by carvacrol and were reduced by the combined effect of carvacrol and oxidants. H2O2 and t-BHP alone influenced the level of antioxidant enzymes differently. While H2O2 did not markedly change the activity of SOD or GPx, lower concentrations of t-BHP stimulated activity of SOD and mainly GPx. The level of iROS was increased by both oxidants and decreased by carvacrol applied either alone or with oxidants. The level of iGSH was not influenced in any of the treatments tested. Our results show that although both oxidants induced oxidative stress and damaged cellular DNA, their influences on other molecular processes were different. The protective effect of carvacrol against DNA-damaging effects of H2O2 was unambiguous, but reduction by carvacrol of the DNA-damaging effect of t-BHP was not observed. These results suggest that the phenolic compound carvacrol contributes to the defense mechanisms of the human organism, but these beneficial effects are dependent on the origin and source of the actual oxidative stress.
- Carcinogenicity: No data available.
- Reproductive toxicity: /ALTERNATIVE and IN VITRO TESTS/ Increased oxidative stress is implicated in the onset and progression of prevalent pregnancy disorders (e.g. gestational diabetes and fetal growth restriction), and in programming the fetus to develop metabolic diseases later in life. Since the molecular mechanisms underlying these effects of oxidative stress are largely unexplored, we aimed to investigate if the placental transport of glucose - the main energetic substrate for the fetus and placenta - is altered by oxidative stress. In a human syncytiotrophoblast (STB)cell model, the BeWo cell line,oxidative stress was induced by treatment with 100 mM tert-butylhydroperoxide(tert-BOOH) for 24 hr. Tert-BOOH decreased the steady-state intracellular accumulation (Amax) of[(3)H]2-deoxyglucose([(3)H]DG) mediated by both facilitative(GLUT) and non-facilitative(non-GLUT)glucose transporters. These effects were not associated with a change in the mRNA expression level of GLUT1, the major placental glucose transporter. Also,they seemed to be independent from phosphoinositide 3-kinase and protein kinase C signaling pathways and were unchanged either by inhibitors of free radical-generating enzymes or by free radical scavengers. In contrast, the dietary polyphenols quercetin, epigallocatechin-3-gallate and resveratrol completely reversed the inhibitory effect of tert-BOOH upon[(3)H]DG accumulation through a specific effect on GLUT-mediated transport. Finally, tert-BOOH induced an increase in the transepithelial permeability to [(3)H]DG in the apical-to-basal direction, apparently related to an increase in its paracellular transport. In conclusion, tert-BOOH-induced oxidative stress reduces STB accumulation of glucose associated with an increase in its transepithelial permeability. This effect may contribute to the deleterious consequences of pregnancy disorders associated with oxidative stress.
- STOT-single exposure: No data available.
- STOT-repeated exposure: No data available.
- Aspiration hazard: No data available.

Likely routes of exposure
- IDENTIFICATION AND USE: tert-Butyl Hydroperoxide is a water-white liquid. It is used to introduce peroxy group into organic molecules, as a reagent in radical substitution reactions, and catalyst in polymerization reactions. HUMAN STUDIES: The main toxic effect of most peroxides is irritation of skin, mucous membranes and eyes. Prolonged or intense skin contact or splashes in the eyes may cause severe injury. Some organic peroxide vapors are irritating and may also cause headaches, intoxication similar to alcohol, and lung edema if inhaled in high concentrations. Some are skin sensitizers. Hydroperoxides are extremely irritating and corrosive to the eyes, with risk of blindness, and may cause serious injury or death if ingested in sufficient quantity. tert-Butyl hydroperoxide induced DNA lesions in human liver cells, and stimulated activity of superoxide dismutase and mainly glutathione peroxidase. A slight increase in the gene expression of Cu/Zn superoxide dismutase and catalase with 500 uM tert-butyl hydroperoxide and of catalase with 200 uM hydrogen peroxide was observed in HepG2 cells in culture. tert-Butyl hydroperoxide has been demonstrated to induce apoptosis in hepatoma cell line HepG2. ANIMAL STUDIES: When tested as a 75% solution in dimethylphthalate by application of two drops to rabbit eyes, it caused injury graded 5 on a scale of 0 to 7. A drop of 35% solution in propylene glycol caused a reaction graded between 46

and 79 on a scale of 0 to 100, persisting at least a week. A 7% solution in the same solvent was the maximum which could be tolerated without significant irritation. In a routine primary skin irritation assay, three out of six rabbits died. The peroxide is a severe dermal irritant. It can also be absorbed through the skin in toxic amounts to cause cyanosis, depression, loss of righting, blanching of the treated skin, convulsions, and death. In male rats serum hepatotoxicity parameters were increased from 2 hr following 1 mmol/kg tert-butyl hydroperoxide and reached their maximum values at 8 hr. In rats, injection of tert-butyl hydroperoxide into common bile-pancreatic duct induces acute necrotizing pancreatitis. In mice, tert-butyl hydroperoxide alters the miRNA expression profile of testis which might play a potential role in oxidative and antioxidative responses and spermatogenesis. In cultured mouse dorsal root ganglion neurons tert-butyl hydroperoxide inhibited axonal transport via lipid peroxidation along with degenerative changes in organelles. tert-Butyl hydroperoxide was tested for the induction of sex-linked recessive lethal mutations in Drosophila melanogaster. It was positive at a dose of 2,000 ppm when administered to males by feeding in this assay. In vivo experiment showed no mutagenesis in the bone marrow cells after rats inhaled 100 ppm for 6 hr/day for 5 days. ECOTOXICITY STUDIES: The effects of tert-butyl hydroperoxide on hepatic transcriptome expression patterns of the teleost fish Lithognathus mormyrus were studied. The effects were demonstrated by leukocyte infiltration into the liver and by differential expression of various genes, some already known to be involved in oxidative stress responses.

Symptoms related to the physical, chemical and toxicological characteristics
- IDENTIFICATION AND USE: tert-Butyl Hydroperoxide is a water-white liquid. It is used to introduce peroxy group into organic molecules, as a reagent in radical substitution reactions, and catalyst in polymerization reactions. HUMAN STUDIES: The main toxic effect of most peroxides is irritation of skin, mucous membranes and eyes. Prolonged or intense skin contact or splashes in the eyes may cause severe injury. Some organic peroxide vapors are irritating and may also cause headaches, intoxication similar to alcohol, and lung edema if inhaled in high concentrations. Some are skin sensitizers. Hydroperoxides are extremely irritating and corrosive to the eyes, with risk of blindness, and may cause serious injury or death if ingested in sufficient quantity. tert-Butyl hydroperoxide induced DNA lesions in human liver cells, and stimulated activity of superoxide dismutase and mainly glutathione peroxidase. A slight increase in the gene expression of Cu/Zn superoxide dismutase and catalase with 500 uM tert-butyl hydroperoxide and of catalase with 200 uM hydrogen peroxide was observed in HepG2 cells in culture. tert-Butyl hydroperoxide has been demonstrated to induce apoptosis in hepatoma cell line HepG2. ANIMAL STUDIES: When tested as a 75% solution in dimethylphthalate by application of two drops to rabbit eyes, it caused injury graded 5 on a scale of 0 to 7. A drop of 35% solution in propylene glycol caused a reaction graded between 46 and 79 on a scale of 0 to 100, persisting at least a week. A 7% solution in the same solvent was the maximum which could be tolerated without significant irritation. In a routine primary skin irritation assay, three out of six rabbits died. The peroxide is a severe dermal irritant. It can also be absorbed through the skin in toxic amounts to cause cyanosis, depression, loss of righting, blanching of the treated skin, convulsions, and death. In male rats serum hepatotoxicity parameters were increased from 2 hr following 1 mmol/kg tert-butyl hydroperoxide and reached their maximum values at 8 hr. In rats, injection of tert-butyl hydroperoxide into common bile-pancreatic duct induces acute necrotizing pancreatitis. In mice, tert-butyl hydroperoxide alters the miRNA expression profile of testis which might play a potential role in oxidative and antioxidative responses and spermatogenesis. In cultured mouse dorsal root ganglion neurons tert-butyl hydroperoxide inhibited axonal transport via lipid peroxidation along with degenerative changes in organelles. tert-Butyl hydroperoxide was tested for the induction of sex-linked recessive lethal mutations in Drosophila melanogaster. It was positive at a dose of 2,000 ppm when administered to males by feeding in this assay. In vivo experiment showed no mutagenesis in the bone marrow cells after rats inhaled 100 ppm for 6 hr/day for 5 days. ECOTOXICITY STUDIES: The effects of tert-butyl hydroperoxide on hepatic transcriptome expression patterns of the teleost fish Lithognathus mormyrus were studied. The effects were demonstrated by leukocyte infiltration into the liver and by differential expression of various genes, some already known to be involved in oxidative stress responses.

SECTION 12: Ecological information

SECTION 12: Ecological information

12.1 Toxicity
Not available.

12.2 Persistence and degradability
Not available.

12.3 Bioaccumulative potential
Not available.

12.4 Mobility in soil
Not available.

12.5 Results of PBT and vPvB assessment
Not available.

12.6 Endocrine disrupting properties
Not available.

12.7 Other adverse effects
Not available.

SECTION 13: Disposal considerations

SECTION 13: Disposal considerations

13.1 Waste treatment methods
Dispose of contents/container in accordance with local/regional/national/international regulations. Do not discharge to drains. Treat as hazardous waste. Do not mix with incompatible wastes.
Contaminated packaging: Dispose of as unused product unless properly cleaned. Cleaning method: Not available.

SECTION 14: Transport information

SECTION 14: Transport information

14.1 UN number
Not available.

14.2 UN proper shipping name
Not available.

14.3 Transport hazard class(es)
Not available.

14.4 Packing group
Not available.

14.5 Environmental hazards
Not available.

14.6 Special precautions for user
Not available.

14.7 Maritime transport in bulk according to IMO instruments
Not available.

SECTION 15: Regulatory information

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture
Not available.

15.2 Chemical safety assessment
Not available.

SECTION 16: Other information

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Product name: tert-Butyl Hydroperoxide
CAS No.: 75-91-2
Synonyms: 2-hydroperoxy-2-methylpropane
Catalog No.: CS-DB-00132
Supplier: Clearsynth Labs Ltd., Mumbai, India
Emergency phone: +91-22-245045900

Revision date: Not available
Disclaimer: The information provided is believed to be accurate based on available data; however, no warranty is expressed or implied. Users must determine suitability for their particular purpose and comply with all applicable regulations.

DISCLAIMER

This MSDS is system-generated. Please verify and confirm all data, statements, and values with the Support Team before use or distribution.