

MATERIAL SAFETY DATA SHEET TOLUENE DI ISOCYNATE

SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1 Product identifier
Product name
Name

:Toluene Diisocyanate 80.20 (TDI 80.20) :m-tolylidene diisocyanate (CAS: 26471-62-5, EC: 247-722-4, Index: 615-006-00-4) :[100120]

Product code

1.2 Relevant identified uses of the substance or mixture and uses advised againstRelevant identified uses:Raw material for the industry.Uses advised against:No information.

SECTION 2: HAZARDS IDENTIFICATION

2.1 Classification of the substance or mixture Classification according to Regulation (EC) No 1272/2008 (CLP) Skin Irrit. 2; H315 Causes skin irritation. Skin Sens. 1; H317 May cause an allergic skin reaction. Eye Irrit. 2; H319 Causes serious eye irritation. Acute Tox. 2; H330 Fatal if inhaled. Resp. Sens. 1; H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled. STOT SE 3; H335 May cause respiratory irritation. Carc. 2; H351 Suspected of causing cancer. Aquatic Chronic 3; H412 Harmful to aquatic life with long lasting effects.

2.2 Label elements Labelling according to Regulation (EC) No 1272/2008 [CLP]



Signal word: DANGER H315 Causes skin irritation. H317 May cause an allergic skin reaction. H319 Causes serious eye irritation. H330 Fatal if inhaled. H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled. H335 May cause respiratory irritation.



H351 Suspected of causing cancer.

H412 Harmful to aquatic life with long lasting effects.

P202 Do not handle until all safety precautions have been read and understood.
P272 Contaminated work clothing should not be allowed out of the workplace.
P304 + P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes.
Remove contact lenses, if present and easy to do. Continue rinsing.
P403 + P233 Store in a well-ventilated place. Keep container tightly closed.
P501 Dispose of contents and container in accordance with all local, regional,

national and international regulations.

Contains	:m-tolylidene diisocyanate
Special provisions	:As from 24 August 2023 adequate
	training is required before industrial or
	professional use.
2.3 Other hazards	
PBT/vPvB	:No information.
Endocrine disrupting properties	:No information.
Additional information	:No information.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 Substances

Name	CAS EC Index Reach	%	Classification according to Regulation (EC) No 1272/2008 (CLP)	Specific Conc. Limits	Notes for substances
m-tolylidene diisocyanate	26471-62-5 247-722-4 615-006-00-4	20-80	Skin Irrit. 2; H315 Skin Sens. 1; H317 Eye Irrit. 2; H319 Acute Tox. 2; H330 Resp. Sens. 1; H334 STOT SE 3; H335 Carc. 2; H351 Aquatic Chronic 3; H412	Resp. Sens. 1; H334; C ≥0.1%	С



3.2 Mixtures

For substances see 3.1.

Notes for substances

ŕ	Some organic substances may be marketed either in a specific isomeric form or as a mixture of several isomers.
	In this case the supplier must state on the label whether the substance is a specific isomer or a mixture of isomers.

SECTION 4: FIRST AID MEASURES

4.1 Description of first aid measures General notes

Never give anything by mouth to an unconscious person. Place patient in recovery position and ensure airway patency. When in doubt or if feeling unwell seek medical assistance. Show the safety data sheet and label to the physician. No action shall be taken involving any personal risk or without suitable training. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. When it is suspected, that there may still be harmful vapours/fumes present in the air, respiratory protection (mask; self contained breathing apparatus) must be used. Wash contaminated clothing with water before removing or use gloves.

Following inhalation

Remove patient to fresh air - move out of dangerous area. Keep at rest in a position comfortable for breathing. If breathing is irregular or respiratory arrest occurs provide artificial respiration. Seek medical help immediately. In case of unconsciousness bring patient into stable side position and seek medical attention.

Following skin contact

Immediately remove contaminated clothing. Areas of the body that have come into contact with the product must be rinsed with water. Immediately obtain professional medical help!

Following eye contact

Immediately flush eyes with running water, keeping eyelids apart. Remove contact lenses, if present and easy to do. Continue rinsing. Consult a physician immediately!

Following ingestion

Do not induce vomiting! If vomiting occurs, the patient should hold the head lower than the hips, because it reduces the possibility of aspiration. In the event that the victim is lying on the back during vomiting, he/she should be placed in the stable side position. Never give anything by mouth to an unconscious person. Immediately consult a doctor. Show the physician the safety data sheet or label.



4.2 Most important symptoms and effects, both acute and delayed Following inhalation

Can cause death if inhaled. Can cause irritation of respiratory system. May cause allergy or asthma symptoms or breathing difficulties if inhaled Symptoms include: headache, dizziness, fatigue, muscular weakness, drowsiness and, in extreme cases, unconsciousness. Coughing, sneezing, nasal discharge, labored breathing.

Following skin contact

Irritating to the skin. Itching, redness, pain. May cause sensitisation by skin contact (itching, redness, rashes).

Following eye contact Causes severe eye irritation. Redness, tearing, pain.

Following ingestion

Irritates mucous membranes in the mouth, throat, esophagus and in gastrointestinal area. May cause nausea/vomiting and diarrhea. May cause abdominal discomfort.

4.3 Indication of any immediate medical attention and special treatment needed Treat symptomatically. Application of corticosteroid cream has been effective in treating skin irritation.

SECTION 5: FIREFIGHTING MEASURES

5.1 Extinguishing media Suitable extinguishing media

Carbon dioxide. Dry chemical powder. Water spray. Alcohol resistant foam. Limestone powder.

Unsuitable extinguishing media

Full water jet.

5.2 Special hazards arising from the substance or mixture Hazardous combustion products

In case of a fire toxic gases can be generated; do not inhale gases/smoke. In the event of fire the following can be generated: carbon monoxide (CO), carbon dioxide (CO2).

Isocyanates. Burning produces noxious and toxic fumes Hydrogen cyanide (hydrocyanic acid). Nitriles. Phosgene.



5.3 Advice for firefighters Protective actions

No action shall be taken involving any personal risk or without suitable training. In case of fire or heating do not breathe fumes/vapours. Cool containers at risk with water spray. If possible remove containers from endangered area.

Special protective equipment for fire-fighters Firefighters should wear appropriate protective clothing for firefighters (including helmets, protective boots and gloves) (BS EN 469) and self-contained breathing apparatus (SCBA) with a full face-piece (BS EN 137).

Additional information

Contaminated firefighting water must be disposed of in accordance with the regulations; do not allow to reach the sewage system.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures

For non-emergency personnel

Protective equipment

Use personal protective equipment (Section 8).

Precautionary measures

Ensure adequate ventilation.

Emergency procedures

No action shall be taken involving any personal risk or without suitable training. Prevent access to unprotected personnel. Evacuate the danger zone. Do not breathe vapour or mist. Avoid contact with skin, eyes and clothing.

For emergency responders

Use personal protective equipment.

6.2 Environmental precautions

Do not allow product to reach water/drains/sewage systems or permeable soil. In case of release into the environment, inform the relevant authorities.

6.3 Methods and material for containment and cleaning up

For containment

Stem the spill if this does not pose risks.



For cleaning up

Absorb product (with inert material), collect it in special container and dispose it to a licensed hazardous-waste disposal contractor. Dispose in accordance with applicable regulations (see Section 13). Prevent release into the sewer, water, basements or confined areas. Ventilate the premises.

OTHER INFORMATION

No information.

6.4 Reference to other sections See also sections 8 and 13.

SECTION 7: HANDLING AND STORAGE

7.1 Precautions for safe handling Protective measures Measures to prevent fire Ensure adequate ventilation.

Measures to prevent aerosol and dust generation

Use general or local exhaust ventilation to prevent inhaling vapours and aerosols.

Measures to protect the environment

Do not discharge into drains, surface water and soil. After use immediately close container tightly.

Other measures

No information.

Advice on general occupational hygiene

Wear suitable protective equipment; see Section 8. Use good personal hygiene practices – wash hands at breaks and when done working with material. Do not eat, drink or smoke while working. Do not breathe vapours/mist. Avoid contact with skin, eyes and clothes. Remove contaminated clothes and wash them before reuse. Handle under inert gas atmosphere in dry equipment. Persons with a history of skin sensitisation problems or asthma, allergies or chronic or recurrent respiratory disease should not be employed in any process in which this product is used. Before entering areas where food is eaten, remove contaminated clothing and protective equipment.

7.2 Conditions for safe storage, including any incompatibilities Technical measures and storage conditions

Store in accordance with local regulations. Keep in a cool, dry and well ventilated place. Keep in tightly closed container. Keep away from food, drink and animal feeding stuffs.



Packaging materials Store only in original container.

Requirements for storage rooms and vessels

Close opened containers after use. Put the containers upright to prevent from leaking. Do not store in unlabelled containers.

Storage class

No information.

Further information on storage conditions No information.

7.3 Specific end use(s)

Recommendations Do not empty the container under pressure.

Industrial sector specific solutions

No information.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 Control parameters Occupational Exposure limit values

Name	mg/m³	ml/m³	Short-term value mg/m ³	Short-term value ml/m³	Remark	Biological Tolerance Values
Isocyanates, all (as –NCO) Except methyl isocyanate	0.02	/	0.07	/		1 μmol isocyanate- derived diamine/mol creatinine in urine - At the end of the period of exposure

Information on monitoring procedures

BS EN 14042:2003 Workplace atmospheres. Guide for the application and use of procedures for the assessment of exposure to chemical and biological agents. BS EN 689:2018 Workplace exposure. Measurement of exposure by inhalation to chemical agents. Strategy for testing compliance with occupational exposure limit values. BS EN 482:2021 Workplace exposure. Procedures for the determination of the concentration of chemical agents. Basic performance requirements.



DNEL/DMEL values

For product No information.

For components

Name	Туре	Exposure route	exp. frequency	Remark	value
m-tolylidene diisocyanate	Worker	Inhalation	long term systemic effects	/	0.035 mg/m ³
m-tolylidene diisocyanate	Worker	Inhalation	short term systemic effects	/	0.14 mg/m ³
m-tolylidene diisocyanate	Worker	Inhalation	long term local effects	/	0.035 mg/m ³
m-tolylidene diisocyanate	Worker	Inhalation	short term local effects TM	/	0.14 mg/m ³

PNEC values

For product

No information.

For components

Name	Exposure route	Remark	value
m-tolylidene diisocyanate	fresh water	1	0.013 mg/L
m-tolylidene diisocyanate	water, intermittent release	fresh water	0.125 mg/L
m-tolylidene diisocyanate	marine water	/	0.001 mg/L
m-tolylidene diisocyanate	water treatment plant	/	1 mg/kg
m-tolylidene diisocyanate	soil	dry weight	1 mg/kg

8.2 Exposure controls

equipment.

Appropriate engineering control

Substance/mixture related measures to prevent exposure during identified uses Ensure that the rooms where the product is stored and/or used are sufficiently ventilated. Use good personal hygiene practices – wash hands at breaks and when done working with material. Handle in accordance with good industrial hygiene and safety practice. Avoid contact with skin, eyes and clothes. Do not eat, drink or smoke while working. Do not breathe vapours/aerosols. Use explosion-proof electrical



Structural measures to prevent exposure

No information.

Organisational measures to prevent exposure

Remove all contaminated clothes immediately and wash them before reuse. Keep eyewash bottles or personal eyewash units and emergency showers available.

Technical measures to prevent exposure

Provide good ventilation and local exhaust in areas with increased concentration. Keep away from food, drink and animal feeding stuffs.

Personal protective equipment

Eye and face protection

Tight fitting protective goggles (EN 166). Wear a face shield when working with molten material.

Hand protection

Protective gloves (EN 374). Chemical-resistant, impervious gloves complying with an approved standard. Observe the manufacturer's instructions regarding the use, storage, maintenance and replacement of gloves. In case of damage or at the first signs of wear and tear, change the gloves immediately. The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer. The penetration time is determined by the protective glove manufacturer and must be observed.

Appropriate materials

Material	Thickness	Penetration Time	Remark
PVA	/	/	EN 374
Leather	/	/	EN 374

Skin protection

Cotton protective clothing and shoes that cover the entire foot (BS EN ISO 20345: 2022). At high risk of skin exposure chemical suits (BS EN ISO 6530:2005) and boots may be required (BS EN ISO 20345:2022).

Respiratory protection

In case of insufficient ventilation wear suitable respiratory protection. Wear suitable protective breathing mask (BS EN 136) with filter A2-P2 (BS EN 14387). For dust/gas/ vapor concentrations above the applicable filter limit, in case of oxygen concentrations below 17% or in vague conditions, autonomous self-contained breathing apparatus should be used, according to standard BS EN 137, BS EN 138.



Thermal hazards

When working with hot material use thermal Insulated gloves (BS EN 407).

Environmental exposure controls

Substance/mixture related measures to prevent exposure No information.

Instruction measures to prevent exposure No information.

Organisational measures to prevent exposure No information.

Technical measures to prevent exposure

Do not allow product to reach drains, sewage systems or ground water.

SECTION 9: PHYSICAL AN	ID CHEMICAL PROPERTIES
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9.1 Information on basic physical and chemical properties Physical state liquid Colour light yellow

light yellov

Odour pungent

Important health, safety and environmental information

Odour threshold	No information.
Melting point/Freezing point	No information.
Boiling point or initial boiling point and boiling	251 °C
range	
Flammability	No information.
Lower and upper explosion limit	No information.
Flash point	127 °C
Auto-ignition temperature	No information.
Decomposition temperature	No information.
рН	No information.
Viscosity	No information.
Solubility	(Reacts with water.)



9.2 OTHER INFORMATION	1
Particle characteristics	No information.
Relative vapour density	No information.
Density and/or relative density	Relative density: 1.21 ((water=1)) Density: 1.21 g/cm 3 at 21 °C
Vapour pressure	< 0.279 hPa at 21 °C
Partition coefficient	No information.
Partition coefficient	No information.

Explosive properties

No information.

SECTION 10: STABILITY AND REACTIVITY

10.1 Reactivity

Stable under recommended transport or storage conditions.

10.2 Chemical stability

Product is stable under normal conditions of use, recommended handling and storage conditions.

10.3 Possibility of hazardous reactions

The product is stable under recommended storage and handling conditions.

10.4 Conditions to avoid

Follow directions for use and storage.

10.5 Incompatible materials

Strong oxidising agents.

10.6 Hazardous decomposition products

Under normal use conditions no hazardous decomposition products are expected. In case of fire/explosion vapours/gases that pose a health hazard are released. Hazardous combustion products, see Section 5 of the safety data sheet.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1 Information on hazard classes as defined in Regulation (EC) No 1272/2008(a) Acute toxicityFor product



Exposure route	Туре	Species	Time	value	Method	Remark
oral	LD_{50}	rat	/	4100 mg/kg	/	/
inhalation	LD ₅₀	rat	4 h	> 14 ppm	/	/
dermal	LD ₅₀	rabbit	/	> 9400 mg/kg	/	/

Additional information

Fatal if inhaled.

(b) Skin corrosion/irritation For product

Species	Time	Result	Method	Remark
/	/	Moderately irritating.	/	/

Additional information

Causes skin irritation.

(c) Serious eye damage/irritation For product

SpeciesTimeResultMethodRemark//Severe irritation.//					
	Species	Time	Result	Method	Remark
	/	/	Severe irritation.	1	/

Additional information

Causes serious eye irritation.

(d) Respiratory or skin sensitisation For product

Exposure route	Species	Time	Result	Method	Remark
dermal	/	/	Sensitizing.	/	/
inhalation	/	/	Sensitizing.	/	/

Additional information

May cause an allergic skin reaction. May cause allergy or asthma symptoms or breathing difficulties if inhaled.

(e) (Germ cell) mutagenicity

No information.

(f) Carcinogenicity

For components



Name	Exposure route	Туре	Species	Time	Value	Result	Method	Remark
m-tolylidene	/	/	/	/	/	IARC 2B:	/	/
diisocyanate						Possibly carcinogenic to		
						humans.		

(g) Reproductive toxicity

No information.

Summary of evaluation of the CMR properties Suspected of causing cancer.

(h) STOT-single exposure

No information.

Additional information STOT - single exposure: May cause respiratory irritation.

(i) STOT-repeated exposure No information.

Additional information STOT RE (repeated exposure): Not classified.

(j) Aspiration hazard No information.

Additional information Aspiration hazard: Not classified.

Symptoms related to the physical, chemical and toxicological characteristics No information.

Interactive effects No information.

11.2 Information on other hazards Endocrine disrupting properties

No information. Other information

No information.



SECTION 12: ECOLOGICAL INFORMATION

12.1 Toxicity Acute (short-term) toxicity No information.

Chronic (long-term) toxicity No information.

12.2 Persistence and degradability Abiotic degradation, physical- and photo-chemical elimination No information.

Biodegradation No information.

12.3 Bioaccumulative potential Partition coefficient No information.

Bioconcentration factor (BCF) No information.

12.4 Mobility in soil Known or predicted distribution to environmental compartments No information.

Surface tension No information.

Adsorption/Desorption No information.

12.5 Results of PBT and vPvB assessment No evaluation.

12.6 Endocrine disrupting properties No information.

12.7 Other adverse effects No information.

12.8 Additional information For product

Harmful to aquatic life with long lasting effects. Do not allow to reach ground water, water courses or sewage system.



SECTION 13: DISPOSAL CONSIDERATIONS

13.1 Waste treatment methods Product / Packaging disposal Waste chemical

Dispose of in accordance with applicable waste disposal regulation. Disposal must be made according to official regulations: deliver it to authorised collector/remover/ transformer of hazardous waste. Do not allow product to reach drains/sewage systems.

Waste codes / waste designations according to LoW No information.

Packaging

Dispose of in accordance with applicable waste disposal regulation. Deliver completely emptied containers to approved waste disposal authorities. Uncleaned containers are classified as hazardous waste - they should be handled in the same manner as the contents.

Waste codes / waste designations according to LoW No information.

Waste treatment-relevant information

No information.

Sewage disposal-relevant information

No information.

Other disposal recommendations No information.

No information.

SECTION 14: TRANSPORT INFORMATION

ADR/RID	IMDG	ΙΑΤΑ	ADN
14.1 UN number or ID number			
UN 2078	UN 2078	UN 2078	UN 2078
14.2 UN proper shipping name			
TOLUENE DIISOCYANATE	TOLUENE DIISOCYANATE	TOLUENE DIISOCYANATE	TOLUENE DIISOCYANATE



14.3 Transport hazard class(es)			
6.1	6.1	6.1	6.1
6		6	
14.4 Packing group			
П	II	П	П
14.5 Environmental hazards			
NO	NO	NO	NO
14.6 Special precautions for user			
Limited quantities 100 ml Special provisions 279 Packing Instructions P001, IBC02 Transport category 2 Tunnel restriction code (D/E)	Limited quantities 100 ml EmS F-A, S-A Flash point 127 °C	Limited Quantity, Packing Instructions (Ltd Qty, Pkg Inst) Y641 Limited Quantity, Maximum Net Quantity/Package (Ltd Qty, Max Net Qty /Pkg) 1 L Packing Instructions (Pkg Inst) 654 Maximum Net Quantity/Package (Max Net Qty/Pkg)5 L Special provisions A113	Limited quantities 100 ml
14.7 Maritime transport in bulk according to IMO instruments			
	Goods may not be carried in bulk in bulk containers, containers or vehicles.		



SECTION 15: REGULATORY INFORMATION

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

Regulation (EC) No 1907/2006 concerning the Registration, Evaluation,
 Authorisation and Restriction of Chemicals (REACH) (including last amendment
 Commission Regulation (EU) 2020/878)
 Regulation (EC) No 1272/2008 on classification, labelling and packaging of

- Regulation (EC) No 1272/2008 on classification, labelling and packaging of substances and mixtures

Information according 2004/42/EC about limitation of emissions of volatile organic compounds (VOC-guideline)

not applicable

Regulation EC 648/2004 on detergents

No information.

Special instructions

Observe the regulations on employment and protection against dangerous substances for young people, pregnant women and nursing mothers.

15.2 Chemical Safety Assessment

No Chemical Safety Assessment has been carried out for this substance/mixture by the supplier.

SECTION 16: OTHER INFORMATION

Indication of changes

2.2 Label elements 5.2 Special hazards arising from the substance or mixture 8.1 Control parameters 8.2 Exposure controls

Key literature references and sources for data

No information.

Abbreviations and acronyms

ATE - Acute Toxicity Estimate

ADR - Agreement concerning the International Carriage of Dangerous Goods by Road ADN - European Agreement concerning the International Carriage of Dangerous Goods by Inland Waterways

- CEN European Committee for Standardisation
- C&L Classification and Labelling
- CLP Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
- CAS# Chemical Abstracts Service number
- CMR Carcinogen, Mutagen, or Reproductive Toxicant
- CSA Chemical Safety Assessment



CSR - Chemical Safety Report DMEL - Derived Minimal Effect Level **DNEL - Derived No Effect Level** DPD - Dangerous Preparations Directive 1999/45/EC DSD - Dangerous Substances Directive 67/548/EEC DU - Downstream User EC - European Community ECHA - European Chemicals Agency EC-Number - EINECS and ELINCS Number (see also EINECS and ELINCS) EEA - European Economic Area (EU + Iceland, Liechtenstein and Norway) EEC - European Economic Community EINECS - European Inventory of Existing Commercial Substances ELINCS - European List of notified Chemical Substances EN - European Standard EQS - Environmental Quality Standard EU - European Union Euphrac - European Phrase Catalogue EWC - European Waste Catalogue (replaced by LoW - see below) **GES - Generic Exposure Scenario** GHS - Globally Harmonized System IATA - International Air Transport Association ICAO-TI - Technical Instructions for the Safe Transport of Dangerous Goods by Air IMDG - International Maritime Dangerous Goods IMSBC - International Maritime Solid Bulk Cargoes IT - Information Technology IUCLID - International Uniform Chemical Information Database IUPAC - International Union for Pure Applied Chemistry JRC - Joint Research Centre Kow - octanol-water partition coefficient LC50 - Lethal Concentration to 50 % of a test population LD50 - Lethal Dose to 50% of a test population (Median Lethal Dose) LE - Legal Entity LoW - List of Wastes (see http://ec.europa.eu/environment/waste/framework/list. htm) LR - Lead Registrant M/I - Manufacturer / Importer MS - Member States MSDS - Material Safety Data Sheet **OC** - Operational Conditions OECD - Organization for Economic Co-operation and Development **OEL - Occupational Exposure Limit OJ - Official Journal OR** - Only Representative OSHA - European Agency for Safety and Health at work



PBT - Persistent, Bioaccumulative and Toxic substance **PEC - Predicted Effect Concentration** PNEC(s) - Predicted No Effect Concentration(s) **PPE - Personal Protection Equipment** (Q)SAR - Qualitative Structure Activity Relationship REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006 RID - Regulations concerning the International Carriage of Dangerous Goods by Rail **RIP - REACH Implementation Project** RMM - Risk Management Measure SCBA - Self-Contained Breathing Apparatus SDS - Safety data sheet SIEF - Substance Information Exchange Forum SME - Small and Medium sized Enterprises STOT - Specific Target Organ Toxicity (STOT) RE - Repeated Exposure (STOT) SE - Single Exposure SVHC - Substances of Very High Concern **UN - United Nations** vPvB - Very Persistent and Very Bioaccumulative H315 Causes skin irritation. H317 May cause an allergic skin reaction. H319 Causes serious eye irritation. H330 Fatal if inhaled. H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled. H335 May cause respiratory irritation. H351 Suspected of causing cancer. H412 Harmful to aquatic life with long lasting effects.