

DEATH OF NATURE

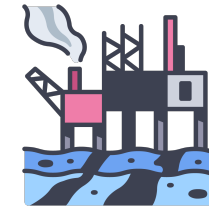


WICKED PROBLEM

MARINE POLLUTION



TOP OIL SPILLS



Gulf War

240-336 million gallons of oil

soot emissions

20,000 tons per day

SO2 emission

24,000 tons per day

Damage to Marine Life

50 to 90% of the fauna of these areas, mainly crabs, Amphipoda and mollusks - killed

Deepwater Horizon

210 million gallons of oil

82,000 birds, 25,900 marine mammals, 6,000 sea turtles and tens of thousands of fish ++ killed

Ixtoc 1 Oil Well

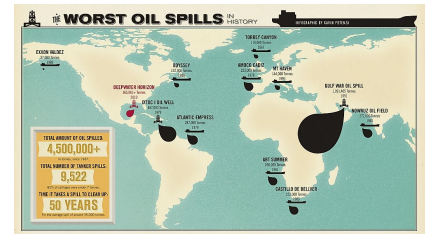
140 million gallons of oil

15,000 sqkm of shrimp harvesting space poisoned millions of amoebalike - killed

1979 Atlantic Empress

88.3 million gallons of oil

No environmental impact study done



CAUSES

WAR TIME TACTIC

UNCONCERNED WITH ECOLOGICAL IMPACT

POLLUTION AS A WAR TACTIC

EXPLOSION OR FIRE

MALFUNCTION OF FAIL SAFE

CORPORATE OVERSIGHT

NATURAL CAUSES - HURRICANES

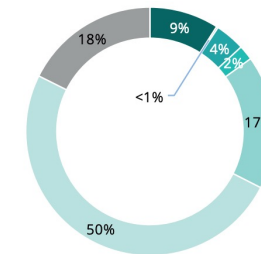
TANKER COLLISION

EQUIPMENT BREAK DOWN

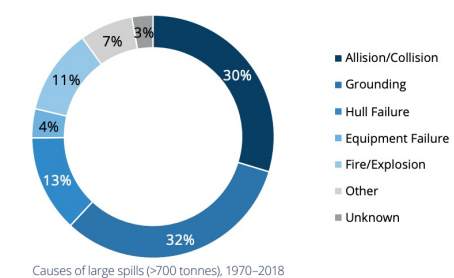
OIL WELL CORES TOO WEAK TO WITHSTAND PRESSURE



HULL FAILURE



GROUNDING



MACROEFFECTS

INSUFFICIENT AMOUNT OF SUNLIGHT PENETRATING WATER DUE TO OIL SURFACE

REDUCED LEVEL OF DISSOLVED OXYGEN

LONG TERM HEALTH PROBLEMS TO HUMANS

HABITAT LOSS

LOW REPRODUCTIVE RATE IN MARINE LIFE

LOSS OF INCOME FOR COASTAL COMMUNITIES

CAUSES OF MARINE POLLUTION

<https://www.marineinsight.com/environment/11-major-oil-spills-of-the-maritime-world/>

<https://www.livescience.com/6363-top-10-worst-oil-spills.html>

<https://www.globalcitizen.org/en/content/nine-of-the-biggest-oil-spills-in-human-history/>

<https://cayman.loopnews.com/content/history-tobago-site-worlds-largest-oil-tanker-spill-4>

https://safety4sea.com/types-of-oil-spills-and-primary-causes/?_cf_chl_jschl_tk=__=08e39bad39b5fb007c3048ece0c4fc4128505885-1623729094-0-Ad6ijLj5pHXfiENyqDOctIs42DHan--X-mgRPnGeyirIEou5k3qa30LsYBgHecjm0KNA1PienUz7jVVKd2MclumJFWY49P9VysFFnYoce_vjbCVBA_VW7t

<https://www.worldatlas.com/articles/oil-spill-disasters.html>

EFFECTS OF MARINE POLLUTION

<https://www.nationalgeographic.com/science/article/bp-oil-spill-still-dont-know-effects-decade-later>

https://www.theguardian.com/environment/2021/jun/04/sri-lankans-face-up-to-unmeasurable-cost-of-cargo-ship-disaster?CMP=tw_t_a-environment_b-gdneco

<http://wwz.cedre.fr/en/Resources/Spills/Spills/Atlantic-Empress-Aegean-Captain>

https://safety4sea.com/wp-content/uploads/2019/05/ITOPF-ITOPF-Handbook-2019_05.pdf

<https://response.restoration.noaa.gov/training-and-education/education-students-and-teachers/how-do-spills-happen.html>