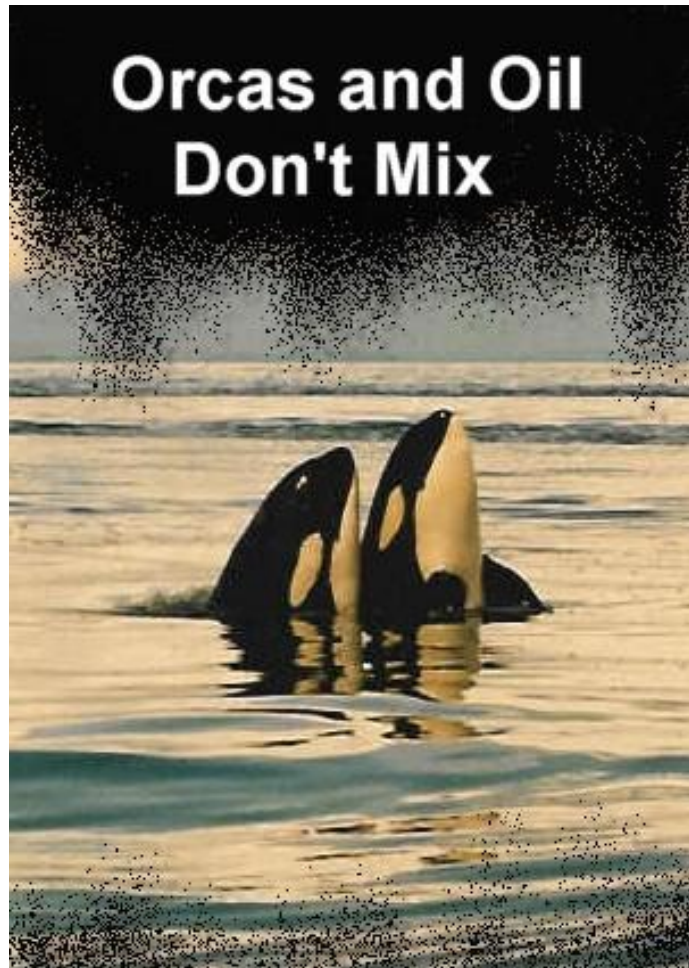


# **“Oil and Chemical Resistant Whales, Otters and Birds?”**



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**Liferforce Foundation  
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# “Oil and Chemical Resistant Whales, Otters and Birds?”

Peter Hamilton, Lifeforce Foundation

## Introduction

Can endangered marine wildlife, such as whales, otters and birds, evolve to a biological state of being resistant to the harmful effects of oil and chemical contamination? No magic bullets on the horizon but essential methodologies can be developed to help wildlife “resist” travelling in polluted waters.

While some deterrents have been developed to scare birds out of polluted areas there is no consistent, permanent approach to protect these and other species because species-specific considerations must be explored further and volunteer availability must be permanent. Decisions to employ such methods should be based on species’ behaviour and designated to knowledgeable persons/organizations who have permanent standby status.

Employing sounds as “attractors” and “deterrents” can be implemented to protect all species that could be exposed. This would include endangered orcas. Populations of orcas in the Pacific Northwest are facing extinction as a result of human impacts.

First, methods must be developed and/or refined to be species specific. Secondly, there should be training and task designation. A WERT (Wildlife Emergency Response Team) should be part of the chemical/oil response efforts to prevent wildlife exposure. A committee of related organizations could organize the development of these programs. They must be contracted in order to be able to provide ongoing services. Funding may be stipulated under Federal legislation such as the Canada Shipping Act. Other funding sources could include company sponsorships.

## Lifeforce Foundation Background

I founded the Vancouver-based Lifeforce Foundation in 1981 to raise public awareness of the interrelationship of human, animal and environment problems. I have studied the behaviour of numerous species and have published papers on enriching the environments of captive animals.

For over two decades Lifeforce has been campaigning to protect orcas such as the endangered Southern Orca Community. In 1982 we helped stop the last capture attempt at Peddar Bay, BC. An estimated 48 orcas were taken from the Southern Community in the late 60s and 70s. These captures not only have resulted in the loss of the 48 orcas but has also created a very low birth rate. The abnormal age and sex ratio will take decades to return to normal.

For the past 12 years, Lifeforce has been conducting a monitoring program called Lifewatch Boater Awareness Program. We distribute whale watch guidelines to boaters and report violations to the authorities.

I have studied the behaviour and travel patterns of the Southern Community under a Canadian Department of Fisheries and Oceans (DFO) research permit. Based on my

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research Liforce has developed “Orca Trails” to promote land-based whale watching. We can notify Marine Park Managers when the orcas are expected to pass by.

In 2002, Liforce worked with government researchers to help prevent any harm to orcas when seismic tests were conducted in the San Juan Islands and BC. Liforce advised the researchers when the orcas and other marine wildlife would be close to the test sites. The researchers would then shut down the underwater air guns. The US team contacted Liforce every day in order to determine the location of the orcas. They would then choose test sites where they would not be near the orcas.

The ongoing accidents involving oil spills reinforces the need for immediate emergency plans to protect the endangered orcas travelling in these waters. The Liforce Foundation has been developing methodology to protect orcas and other wildlife from these life-threatening hazards.



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### Cherry Point, WA

## Oil Spill History

On June 26, 1999, I was in Point Roberts, WA when some orcas passed by. It was all of J and K pods. The next morning the media reported an oil spill at Cherry Point where the orcas were heading. The Arco Texas had spilled 300 gallons of crude oil from Valdez, AK. Most of the oil had spread north towards Point Whitehorn, WA and Boundary Bay, BC. When I heard about the spill location I thought that it was highly likely that these orcas went right through it because they frequently take Rosario Strait when they head south. Unfortunately, they did pass through the oil spill area. I confirmed that the orcas were in Rosario Strait the next morning.

One exposure to oil and other such hazards could result in long lasting health problems and/or fatalities. The 2000 orca census found historic low numbers in J and K pods that could have been associated with this 1999 exposure. Shocked that there were no plans in place to prevent such a tragedy, I started looking at possible methods to "warn" orcas of such dangers.

An oil or chemical spill could affect a major part of the home ranges of marine wildlife. There have been several accidents in the Southern Georgia Strait that is a temporary home range of endangered orcas.

When the Exxon Valdez oil spill first occurred, an orca pod was seen surfacing in the oil slick. In 1988, this AB pod consisted of 36 members. 14 were missing over the following three years, down to 22. The orcas probably died from inhaling the oil and were sickened from eating oil-coated prey.

From 1995 to 2003 there have been nine oil spill hazards in the Cherry Point/Ferndale and Rosario Area (as listed in Washington Oil Spill Resource Damage Assessments 1991 to 2003). On December 30, 2003 there was a large oil spill in Puget Sound. There was approximately 4800 gallons of heavy fuel oil accidentally dumped in Puget Sound near the Chevron facility in Point Wells. Since then, two other spills have occurred in October 2004 and January 2005.

There are reports of numerous other “minor” accidents. For example, on June 6, 2000 at 11:45 AM the “Axios” spilled an undisclosed amount of hydraulic oil as reported by ARCO at Cherry Point. J pod was present. I was with J2, “Granny”, at the site at approximately 12:32 PM.

## **Methods to Alter Courses**

Over the years, both planned and serendipitous events have led me to believe that it is possible to use benign, low-level sounds to attract cetaceans. In so doing, I could alter their courses to direct them away from environmental hazards.

Lifeforce has been conducting field studies utilizing existing, refined and new methods discovered through our previous wildlife protection work and scientific literature searches. Sounds, that attract animals to them and that deter animals away from them, are being explored.

Some of the methodologies can also be applied to terrestrial animals that are vulnerable to exposure to oil and chemical spills.

During one Lifeforce test the orcas were heading south and, when they heard our playbacks of orca communication, all three pods dramatically reversed direction to head north towards the sound source. They continued to travel north even when the sounds were turned off.

On another occasion, when a researcher was recording orca communication he accidentally played back the recordings and the orcas rushed towards his boat.

Lifeforce is hoping to complete studying these methods and implement our findings during emergency situations over the next few years. We hope to coordinate our programs with government, business, NGOs and others who are trying to protect marine wildlife.

## **Expected benefits to the environment**

The Lifeforce studies directly benefits orcas and other wildlife that could be exposed to oil spills and other environmental hazards. Our work contributes to efforts to protect marine ecosystems for all life. Orcas are high on the food chain and are bio-indicators of marine pollution – both orca and human survival is interrelated.

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Studies have placed polychlorinated biphenyls (PCBs) levels in orcas of the Pacific Northwest as among the highest measured in marine mammals anywhere in the world. Toxic chemicals can affect their growth, reproduction and immune systems.

In orcas, studies have shown that adult females may transfer up to 90 percent of their PCBs and other contaminants, such as DDT, to their first-born calf. This most likely causes major harm to the female orcas' reproductive cycles as well as young orcas' development.

In a 2004 study by Dr. Peter Ross, DFO, 23 chemicals, mainly pesticides, were listed that could have effects similar to those of PCBs. One of the most common is 2,4-D, which kills dandelions.

## Study Activities

Lifeforce would:

1. Develop and/or refined methods to be species specific in order to prevent wildlife contact with contaminants.
2. Work with individuals, organizations and government to determine species-specific behaviours.
3. Work to resolve any industry related conflicts to preserve wildlife habitats.
4. Continue to have discussions with oil spill response companies regarding task designation in the event of any oil/chemical spill(s).
5. Provide any training (written and/or verbal) that is necessary to perform all such wildlife protection work.
6. Work with BC Ministry of Water, Land & Air Protection, Canadian Wildlife Service and all other related government response agencies to be part of the chemical/oil response efforts for the protection of species at risk.
7. Conduct field studies as follows:
  - a) Determine if sound deployment could be used as a conservation tool to remove terrestrial wildlife from contaminated areas.
  - b) Determine if sound deployment could be used as a conservation tool to prevent exposure of threatened fish stocks to contamination/prey.
  - c) Determine if sound deployment could be used as a conservation tool to reduce any bird and waterfowl exposure to hazardous spills.
  - d) Continue to develop innovative methodology to reduce the harm to orcas caused by anthropogenic activities. Lifeforce proposes to look at the responses from *Orcinus orca* to safe levels of novel sound stimuli. The purpose is to:
    - i. Determine if benign, novel sound stimuli can be used to alert and/or change the direction of endangered orcas to stop exposures to hazards such as oil/chemical spills.
    - ii. Determine if lone orcas can be reunited with the family pod by using methodologies such as lead sound signals.
8. Gather data for a report on the development and applications of the methodologies. This will include photograph and video documentation.



## Conclusion

Methodologies can and must be developed to be species specific. These techniques to prevent wildlife exposure to oil and chemical spills can be applied to both marine and terrestrial species.

A WERT (Wildlife Emergency Response Team) should be part of the chemical/oil response efforts. This team would be trained and be responsible for designated tasks. They will deploy humane attractors and deterrents to prevent wildlife exposure.

The WERT and the development of prevention methods could be organized by a committee of related organizations. All participants would be contracted in order to maintain a permanent WERT. Funding may be stipulated under Federal legislation such as the Canada Shipping Act and/or money could be provided through company sponsorships. The onus must not be on the WERT to raise donations because the responsibility lies within the government and responsible businesses.

Faced with the lack of action and funding opportunities, Lifeforce is concerned that orcas and other wildlife are being treated as if they were resistant to oil and chemical spills. I helped lobby the Canadian and US governments to designate orcas as being endangered. In view that orcas are facing extinction, I hope that there will be immediate, direct action to protect them and other marine wildlife.



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Cherry Point, WA

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## **Donations Gratefully Accepted and Acknowledged**

Lifeforce would gratefully accept donations and sponsorships towards equipment, operating costs and field studies.

Financial support could be acknowledged in many exciting ways. This would include signage on our research vessel and/or on our wildlife rescue unit. Lifeforce supporters would also receive a lot of great publicity through media coverage of our programs.

Please Contact:  
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We all know that it will happen again.  
We all know that we must be prepared.  
Whales, otters and birds are not resistant  
to oil and chemicals.  
Simply put:  
**Orcas and Oil Don't Mix.**



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