

HONORS CHEMISTRY RESEARCH PROJECT

パシフィックリングオブファイアで失われた

Lost in the Pacific Ring of Fire

The Scenario

"Let's get out of here, Harry!" you yell as you jump into the seat next to the captain of Chemily, a GRP high performance coastal patrol boat. As you twist around in the seat to call for the mooring lines to be released, you see the drug runners come rushing onto the pier. One of them stops and levels his semi-automatic assault weapon at your boat. The noise of his shots is covered by the patrol boat's engine suddenly exploding to life. "Come on Harry, they're going to hit the boat!" He pushes the throttle forward and mutters to his boat, "Come on baby. We're gonna need all you got." To your relief, the gap between the Chemily and the marina quickly widens. The drug runners are still taking shots at you, but now you are out of range. Harry eases off the throttle and settles to a cruising speed of about 25 knots. "Piece of cake! Now just one more stop, but it's gonna be a long ride from Saipan to Tokyo," he says. Exhausted, you settle back in your seat. Since you haven't slept for days you are really looking forward to a long, uneventful trip home in to ring in the new year with your sweetie.

A sudden angry shout awakens you from your rest. Harry is hovering over the controls. "They shot my baby," he growls through his teeth. He taps one of the gauges with his finger. You lean over and see that the fuel level is critically low. One of those shots must have hit the fuel tank. "We're losing gas fast," Harry shouts, "We're only about 130 kilometers east of Chichi-jima. I notified headquarters of our itinerary, with any luck they'll send help." All around you the blue green waters of the Philippine sea extend as far as the eye can see and you decide Harry's got it covered. You close your eyes for a few more minutes of shut eye only to have Harry shake you awake. "Hey partner, we may have a problem. Look at the map – nothing is supposed to be ahead, right? Then what is that!?! Just as you grab the map, you hear Harry yell, "I smell gas!" All of a sudden you hear the deafening clamor of what sounds like tearing metal. Just as you think the noise will never stop, everything goes black.

An abrupt splash of water awakens you and you find yourself barely hanging on to a small piece of wood. Swiftly you realize that it wasn't the sun that exploded, it was the boat. With blood dripping down your face, you slowly reach over and try to awaken Harry who is nearby. Unfortunately, he is dead. As your vision clears you see what looks like jagged black rocks jutting out of the water about three kilometers away. Surely that can't be an island! Is it a mirage? Mirage or not, you decide it's your only chance. You notice that all around you are many of the items from the boat that miraculously survived the explosion, but they are beginning to sink! Knowing that you only have a few minutes before everything is gone, you quickly examine the cargo and debris scattered in the water around you. The list that follows describes those items that you are considering taking with you to what you will hopefully . . . one day . . . call Nishinoshima Island.

The Items

1. Backpack filled with a maps of the Philippine Sea, constellation maps of the Pacific, and a Japanese-English dictionary
2. Marineland Black Diamond premium activated carbon, 40 oz bottle
3. Small plastic bottle labeled "Dimenhydrinate, 50 mg"
4. Clear plastic tub containing two boxes of UHV foil, 500 ft each
5. Coverking windshield sunshade
6. Wooden crate that contains a thirty square-meter sheet of bubble pink polychloroprene
7. Fox 40 Classic CMG referee whistle with breakaway lanyard
8. cuddle+kind Noah the Dog 20" hand-knit doll
9. Harry's "prescription" for hyperopia
10. Neodymium fishing magnet, 32 mm
11. Opened bag of Trader Joe's butter toffee pretzels
12. Polyvinyl alcohol carp bait bags, pack of 100 solid bags
13. Revere Aero Compact life raft, with valise, no canopy
14. Small, crumpled envelope with handwritten label, "Ricin"
15. Mesh bag labeled レモン、1ダース
16. One roll of duct tape
17. Pack of eight nappy pins
18. Small clear bottle labeled "White Phosphorus"
19. Loaded scuba diving spear fishing gun
20. Blue recycling trash bag that contains an empty Fanta® can, an empty Snickers® wrapper, 2 empty water bottles, and an empty 2L RC Cola® bottle
21. Wooden crate containing two white, sausage like packages labelled "Tovex"
22. White plastic bottle labeled "ZnO, 500 g"
23. Viva Naturals Organic Extra Virgin Coconut Oil, 16 oz plastic bottle

The Mission

From your knowledge of chemistry, survival tactics, and research information, choose only 10 items from the above list which will maximize your chances for rescue.

After you have carried your supplies to a safe distance, you turn back to see that every single item you had left behind, and every scrap of debris remaining from the explosion has disappeared into the blue green waters – never to be seen again. Emptying the pockets of your Eddie Bauer wind-breaker you find, in addition to the other 10 items you had gathered only seconds earlier, a handkerchief, a passport, two quarters, three pennies, your lucky zinc penny, and a wallet containing a few credit cards, three \$50 bills, an address book, and a picture of your family.

If you do everything correctly – and that includes using your knowledge of chemistry and correctly addressing ALL of the aspects of survival, you can assume that you will be rescued in three days.

A hint on how to start: **first**, prioritize your needs, i.e., food, shelter, water, signal, etc. **Second**, identify each item and determine under which category it would be used. The rest is up to you! And now your attempt at survival begins.

The Journal

After you are rescued, you will write an illustrated journal account of your survival. (This is the typed research paper that you will turn in on the due date.)

Your journal account must have some type of introduction and a conclusion and must include these three major sections with illustrations. Each section must start on a new page, and be divided into smaller, "mini" paragraphs containing the following:

- 1) The Ten Items I Chose: The ten items you chose and a brief explanation as to why each would be chosen by an expert survivalist/chemist;
- 2) Items I Would Like to Have Taken: Items that would have been good to choose, but you were not able to because you could only take ten, AND your reasons why you would have taken them;
- 3) Items I Did Not Want to Take: Items you absolutely do not want to take with you and your reasons why.
- 4) Illustrations: You must include at least two (2) full paged, hand drawn/traced and labelled illustrations to help explain your survival techniques. Each drawing must have correct documentation on the drawing.

Your Grade

For every item that you tell about that has the correct reason for taking (or reason for not using) and correct documentation, you will receive 3 points. If you don't have either a correct reason or correct documentation, you will receive no points. You will receive 10 points each for your two illustrations that have correct documentation.

There are 10 items that are the top ten that should be chosen for best survival as an "expert chemist." If you choose any of these 10 as the ten you are taking with you to survive, you will receive 8 points per item instead of 3. All of this means the maximum points you can earn on your project (not including extra credit) is 139/100. The highest grade, however, that you can make on the project is 110/100.

Research Guidelines

- SOURCES:** You must have at least three different sources that you may use multiple times each. Anything from the Internet will count as one source. This means you will have to have at least two physical book sources. Once you have three different sources, you may use any one of them as many times as you need. For example, if you have two different book sources, you can use the Internet as many times as you like.
- You cannot use Wikipedia, WiseGeek.org, About.com, Yahoo Answers, Google.com, Quora.com or any other such site as a source you reference in your paper. If you do so, you will not be given any credit for the item. You may use any of these as a place to get ideas, but you must have a professional, published source to reference in your paper that backs up the information in these sources.
- You cannot use any video sources as a final source for your paper, but you may use them as a place to get ideas. In order to receive credit, you must have a professional, published source to reference in your paper that backs up the information in any video sources.
- You will have a ton of research to keep up with, so a STRONG suggestion is to use a tool like Google or Evernote to organize your online research and then only print what you need at the end. The printed copies of Internet sources must contain the URL at the top or bottom of the page. You may not copy and paste from the Internet

IMPORTANT: Please be advised, your research on these items will take a long time and putting your journal together will also take a great deal of work. Make sure you budget your time so that you have not only ample time for research, but also plenty of time to write your journal account and put it in its proper format, as well as compile your Works Cited.

This is the end of PHASE 1, the research phase of your project. STOP HERE FOR NOW until you have a very good start on your research and are ready to begin assembling everything to start writing your paper.

CHEMISTRY RESEARCH PROJECT: PHASE 2

Now that you've begun your research, it's time to start assembling everything to start writing your paper. **SUPER IMPORTANT:** The next two pages of guidelines must be carefully followed in researching and writing your journal account. If you do not, your paper may not be accepted. Read and follow carefully.

Journal Guidelines

- 1. IN-TEXT CITATION:** Every item you discuss, no matter in which section of your paper, must be internally documented separately, highlighted in yellow, and listed in its own separate "mini-paragraph."
 - Even information that is common knowledge must be documented. Ask me if you have any doubts.
 - You will write about all 23 items, so you **MUST** have at least 23 separate internal references, one (or more) for each individual item, even if they all come from the same source. It will not be unusual for you to have more than one different internal reference for items, so you will have a lot more than 23 internal references.
 - The in-text citation within the paper should go immediately after the item is mentioned or when its use is described. (For details, see the end paragraph, Documenting Your Research Paper.)
 - If several items are being used to make one thing, they may be included together in the same paragraph; however, even then, each item must each be documented separately.
- 2. SOURCES:**
 - You must have at least three different sources that you may use multiple times each. Anything from the Internet will count as one source. This means you will have to have at least two physical book sources. Once you have three different sources, you may use any one of them as many times as you need. For example, if you have two different book sources, you can use the Internet as many times as you like.
 - You cannot use Wikipedia, WiseGeek.org, About.com, Yahoo Answers, Google.com, Quora.com or any other such site as a source you reference in your paper. If you do so, you will not be given any credit for the item. You may use any of these as a place to get ideas, but you must have a professional, published source to reference in your paper.
 - You must make printed copies of ALL the sources you use, including Internet sources, books or any other sources. **IMPORTANT:** Only turn in a copy of the page(s) that you use, and highlight the portions that you use. Staple multiple pages. (Printing front and back will save paper and space!)
 - The printed copies of Internet sources must contain the URL at the top or bottom of the page. You may not copy and paste from Internet sources.
- 3. ILLUSTRATIONS:** You must include at least two (2) full paged, hand drawn/traced and labelled illustrations to help explain your survival techniques. Drawing a picture of an item by itself is not acceptable.
 - You may not use photocopies or computer printouts. The drawings should each take a full sheet of paper.
 - At the bottom of each illustration, you must include in-text citation. Also the source for the drawing must be included in the Works Cited if it is not already in your paper. You will put the labeled drawings in a special Appendix section at the end of your paper, after the Works Cited.
- 4. WORKS CITED:** At the end of your journal account, **starting on a new page**, you must include a Works Cited.
 - The entries in the Works Cited should be listed in the order that they occur in your paper, not in alphabetical order. Use reverse indentation.**
 - The beginning of each Works Cited entry should EXACTLY MATCH the in-text citation.
 - Encyclopedia articles, dictionary entries, and Internet articles must be listed by the title of the article in BOTH the in-text citation AND the Works Cited.

5. Your journal account must be in manuscript form – typed and double spaced. You must include a title page, and every page following the title page must include your last name and page number in the top right hand corner. Check the Internet for samples of title pages and choose one that fits your own personal style.
6. Your journal must be put in the right pocket of an ordinary two-pocket folder. Do not put it in the brads. Put the copies of your sources in the left pocket of the folder in the order that they occur in your paper.
7. The project is due at the beginning of the class period on the day assigned. Because the project has been pre-assigned, no late papers will be accepted. If for any reason you are absent the day the project is due, it is still your responsibility to see to it that your paper is brought to school and turned in on time.

Documenting Your Research Paper

- In-text citation in your chemistry research paper will be different than a standard English research paper. You will always use the year of publication instead of the page number in the documentation. If your source is a book with an author or editor, use the last name of the author or editor and the copyright date of the work, not the page number – like this: (McManners 2007).
- For Internet sites, use the title of the article or the name of the organization’s web site, and the date – like this: (“Nishino-shima Volcano News & Activity Updates” 2020). NEVER USE the website or the URL in your in-text citation. Only include it with your other info in the Works Cited. If a website has no copyright date, put **n. d.** in place of the date.
- For books that have more than one author, list the first name mentioned, et al, and the date (Nesbitt, et al. 1984).
- For multi-entry or multi-volume works such as a dictionary, The Merck Index, or an encyclopedia, etc., site the entry and the copyright date of the work – like this: (“Ethanol” 2017). This is also how the articles will be listed in the Works Cited, first by the name of the article, and then the rest of the source (see below).
- Works that do not have a copyright or publishing date should be followed by “n.d.”, For Internet sites, you will often have to scroll down to the bottom of the site to find the copyright date.

MANUSCRIPT FORM CHECKLIST EXAMPLES

- Title page (*minus 5 points if not in paper*)
- In-text citation (*paper will not be accepted without it*)
- Correct in-text citation (*minus 2 points each if incorrect, up to 20 points*)
- Three sections (each starting on a new page) with each item **highlighted in YELLOW** and in a separate paragraph within the section (*minus up to 20 points*)
- Sources copied (*minus 2 points for each copy missing, or minus 25 points if none*)
- Copied sources highlighted (*minus 20 points if none, or minus 2 points each*)
- Illustrations (*minus 20 points if no illustrations*)
- Illustrations documented on the page of the illustration (*minus 10 points*)
- Works cited (*paper will not be accepted without it*)
- Works cited manuscript form (*minus up to 20 points*)
- Internal references included in paper also in Works Cited (*minus 2 points each up to 20 points*)
- Copied sources or Works Cited not in the correct order (*up to 20 points, and paper may not be accepted*)

Works Cited – These are Samples Only!!

(Not in alphabetical order, but in the order they occur in your paper!)

McManners, Hugh. The Complete Wilderness Training Manual". London: Dorling Kindersley, 2007.

"Nishino-shima Volcano News & Activity Updates". Internet. 2020.
<https://www.volcanodiscovery.com/nishino-shima.html>

Nesbitt, P., Pond, A. and Allen, W. A Pilot's Survival Manual. Reinhold: New York, 1978.

Craighead, F. and Craighead, J. How to Survive on Land and Sea. U.S. Navy: Annapolis, Md., 1984.

"Ethanol", *The Merck Index Online*, viewed 26 February 2016, The Merck Index Online database.

"Ethanol". O'Neil, M.J., ed. *The Merck Index*. 14th ed. New Jersey: Merck, 2006.