The Secret Behind the Sanctions
How the U.S. Intentionally Destroyed Iraq's Water Supply

by Thomas J. Nagy

Over the last two years, I've discovered documents of the Defense Intelligence Agency proving beyond a doubt that, contrary to the Geneva Convention, the U.S. government intentionally used sanctions against Iraq to degrade the country's water supply after the Gulf War. The United States knew the cost that civilian Iraqis, mostly children, would pay, and it went ahead anyway.

The primary document, "Iraq Water Treatment Vulnerabilities," is dated January 22, 1991. It spells out how sanctions will prevent Iraq from supplying clean water to its citizens.

"Iraq depends on importing specialized equipment and some chemicals to purify its water supply, most of which is heavily mineralized and frequently brackish to by Thomas J. Nagy

Over the last two years, I've discovered documents of the Defense Intelligence Agency proving beyond a doubt that, contrary to the Geneva Convention, the U.S. government intentionally used sanctions against Iraq to degrade the country's water supply after the Gulf War. The United States knew the cost that civilian Iraqis, mostly children, would pay, and it went ahead anyway.

The primary document, "Iraq Water Treatment Vulnerabilities," is dated January 22, 1991. It spells out how sanctions will prevent Iraq from supplying clean water to its citizens.

"Iraq depends on importing specialized equipment and some chemicals to purify its water supply, most of which is heavily mineralized and frequently brackish to saline," the document states. "With no domestic sources of both water treatment replacement parts and some essential chemicals, Iraq will continue attempts to circumvent United Nations Sanctions to import these vital commodities. Failing to secure supplies will result in a shortage of pure drinking water for much of the population. This could lead to increased incidences, if not epidemics, of disease."

The document goes into great technical detail about the sources and quality of Iraq's water supply. The quality of untreated water "generally is poor," and drinking such water "could result in diarrhea," the document says. It notes that Iraq's rivers "contain biological materials, pollutants, and are laden with bacteria. Unless the water is purified with chlorine, epidemics of such diseases as cholera, hepatitis, and typhoid could occur."

The document notes that the importation of chlorine "has been embargoed" by sanctions. "Recent reports indicate the chlorine supply is critically low."

Food and medicine will also be affected, the document states. "Food processing, electronic, and, particularly, pharmaceutical plants require extremely pure water that is free from biological contaminants," it says.

The document addresses possible Iraqi countermeasures to obtain drinkable water despite sanctions.

"Iraq conceivably could truck water from the mountain reservoirs to urban areas. But the capability to gain significant quantities is extremely limited," the document states. "The amount of pipe on hand and the lack of pumping stations would limit laying pipelines to these reservoirs. Moreover, without chlorine purification, the water still would contain biological pollutants. Some affluent Iraqis could obtain their own minimally adequate supply of good quality water from Northern Iraqi sources. If boiled, the water could be safely consumed. Poorer Iraqis and industries requiring large quantities of pure water would not be able to meet their needs."

The document also discounted the possibility of Iraqis using rainwater. "Precipitation occurs in Iraq during the winter and spring, but it falls primarily in the northern mountains," it says. "Sporadic rains, sometimes heavy, fall over the lower plains. But Iraq could not rely on rain to provide adequate pure water."

As an alternative, "Iraq could try convincing the United Nations or individual countries to exempt water treatment supplies from sanctions for humanitarian reasons," the document says. "It probably also is attempting to purchase supplies by using some sympathetic countries as fronts. If such attempts fail, Iraqi alternatives are not adequate for their national requirements."

In cold language, the document spells out what is in store: "Iraq will suffer increasing shortages of purified water because of the lack of required chemicals and desalination membranes. Incidences of disease, including possible epidemics, will become probable unless the population were careful to boil water."

The document gives a timetable for the destruction of Iraq's water supplies. "Iraq's overall water treatment capability will suffer a slow decline, rather than a precipitous halt," it says. "Although Iraq is already experiencing a loss of water treatment capability, it probably will take at least six months (to June 1991) before the system is fully degraded."

This document, which was partially declassified but unpublicized in 1995, can be found on the Pentagon's web site at www.gulflink.osd.mil. (I disclosed this document last fall. But the news media showed little interest in it. The only reporters I know of who wrote lengthy stories on it were Felicity Arbuthnot in the Sunday Herald of Scotland, who broke the story, and Charlie Reese of the Orlando Sentinel, who did a follow-up.)

Recently, I have come across other DIA documents that confirm the Pentagon's monitoring of the degradation of Iraq's water supply. These documents have not been publicized until now.

The first one in this batch is called "Disease Information", and is also dated January 22, 1991. At the top, it says, "Subject: Effects of Bombing on Disease Occurrence in Baghdad." The analysis is blunt: "Increased incidence of diseases will be attributable to degradation of normal preventive medicine, waste disposal, water purification/distribution, electricity, and decreased ability to control disease outbreaks. Any urban area in Iraq that has received infrastructure damage will have similar problems."

The document proceeds to itemize the likely outbreaks. It mentions "acute diarrhea" brought on by bacteria such as E. coli, shigella, and salmonella, or by protozoa such as giardia, which will affect "particularly children," or by rotavirus, which will also affect "particularly children," a phrase it puts in parentheses. And it cites the possibilities of typhoid and cholera outbreaks.

The document warns that the Iraqi government may "blame the United States for public health problems created by the military conflict."

The second DIA document, "Disease Outbreaks in Iraq," is dated February 21, 1990, but the year is clearly a typo and should be 1991. It states: "Conditions are favorable for communicable disease outbreaks, particularly in major urban areas affected by coalition bombing." It adds: "Infectious disease prevalence in major Iraqi urban areas targeted by coalition bombing (Baghdad, Basrah) undoubtedly has increased since the beginning of Desert Storm. . . . Current public health problems are attributable to the reduction of normal preventive medicine, waste disposal, water purification and distribution, electricity, and the decreased ability to control disease outbreaks."

This document lists the "most likely diseases during next sixty-ninety days (descending order): diarrheal diseases (particularly children); acute respiratory illnesses (colds and influenza); typhoid; hepatitis A (particularly children); measles, diphtheria, and pertussis (particularly children); meningitis, including meningococcal (particularly children); cholera (possible, but less likely)."

Like the previous document, this one warns that the Iraqi government might "propagandize increases of endemic diseases."

The third document in this series, "Medical Problems in Iraq", is dated March 15, 1991. It says: "Communicable diseases in Baghdad are more widespread than usually observed during this time of the year and are linked to the poor sanitary conditions (contaminated water supplies and improper sewage disposal) resulting from the war. According to a United Nations Children's Fund (UNICEF)/World Health Organization report, the quantity of potable water is less than 5 percent of the original supply, there are no operational water and sewage treatment plants, and the reported incidence of diarrhea is four times above normal levels. Additionally, respiratory infections are on the rise. Children particularly have been affected by these diseases."

Perhaps to put a gloss on things, the document states, "There are indications that the situation is improving and that the population is coping with the degraded conditions." But it adds: "Conditions in Baghdad remain favorable for communicable disease outbreaks."

The fourth document, "Status of Disease at Refugee Camps," is dated May 1991. The summary says, "Cholera and measles have emerged at refugee camps. Further infectious diseases will spread due to inadequate water treatment and poor sanitation."

The reason for this outbreak is clearly stated again. "The main causes of infectious diseases, particularly diarrhea, dysentery, and upper respiratory problems, are poor sanitation and unclean water. These diseases primarily afflict the old and young children."

The fifth document, "Health Conditions in Iraq, June 1991," is still heavily censored. All I can make out is that the DIA sent a source "to assess health conditions and determine the most critical medical needs of Iraq. Source observed that Iraqi medical system was in considerable disarray, medical facilities had been extensively looted, and almost all medicines were in critically short supply."

In one refugee camp, the document says, "at least 80 percent of the population" has diarrhea. At this same camp, named Cukurca, "cholera, hepatitis type B, and measles have broken out."

The protein deficiency disease kwashiorkor was observed in Iraq "for the first time," the document adds. "Gastroenteritis was killing children. . . . In the south, 80 percent of the deaths were children (with the exception of Al Amarah, where 60 percent of deaths were children)."

The final document is "Iraq: Assessment of Current Health Threats and Capabilities," and it is dated November 15, 1991. This one has a distinct damage-control feel to it. Here is how it begins: "Restoration of Iraq's public health services and shortages of major medical materiel remain dominant international concerns. Both issues apparently are being exploited by Saddam Hussein in an effort to keep public opinion firmly against the U.S. and its Coalition allies and to direct blame away from the Iraqi government."

It minimizes the extent of the damage. "Although current countrywide infectious disease incidence in Iraq is higher than it was before the Gulf War, it is not at the catastrophic levels that some groups predicted. The Iraqi regime will continue to exploit disease incidence data for its own political purposes."

And it places the blame squarely on Saddam Hussein. "Iraq's medical supply shortages are the result of the central government's stockpiling, selective distribution, and exploitation of domestic and international relief medical resources." It adds: "Resumption of public health programs . . . depends completely on the Iraqi government."

As these documents illustrate, the United States knew sanctions had the capacity to devastate the water treatment system of Iraq. It knew what the consequences would be: increased outbreaks of disease and high rates of child mortality. And it was more concerned about the public relations nightmare for Washington than the actual nightmare that the sanctions created for innocent Iraqis.

The Geneva Convention is absolutely clear. In a 1979 protocol relating to the "protection of victims of international armed conflicts," Article 54, it states: "It is prohibited to attack, destroy, remove, or render useless objects indispensable to the survival of the civilian population, such as foodstuffs, crops, livestock, drinking water installations and supplies, and irrigation works, for the specific purpose of denying them for their sustenance value to the civilian population or to the adverse Party, whatever the motive, whether in order to starve out civilians, to cause them to move away, or for any other motive."

But that is precisely what the U.S. government did, with malice aforethought. It "destroyed, removed, or rendered useless" Iraq's "drinking water installations and supplies." The sanctions, imposed for a decade largely at the insistence of the United States, constitute a violation of the Geneva Convention. They amount to a systematic effort to, in the DIA's own words, "fully degrade" Iraq's water sources.

At a House hearing on June 7, Representative Cynthia McKinney, Democrat of Georgia, referred to the document "Iraq Water Treatment Vulnerabilities" and said: "Attacking the Iraqi public drinking water supply flagrantly targets civilians and is a violation of the Geneva Convention and of the fundamental laws of civilized nations."

Over the last decade, Washington extended the toll by continuing to withhold approval for Iraq to import the few chemicals and items of equipment it needed in order to clean up its water supply.

Last summer, Representative Tony Hall, Democrat of Ohio, wrote to then-Secretary of State Madeleine Albright "about the profound effects of the increasing deterioration of Iraq's water supply and sanitation systems on its children's health." Hall wrote, "The prime killer of children under five years of age--diarrheal diseases--has reached epidemic proportions, and they now strike four times more often than they did in 1990. . . . Holds on contracts for the water and sanitation sector are a prime reason for the increases in sickness and death. Of the eighteen contracts, all but one hold was placed by the U.S. government. The contracts are for purification chemicals, chlorinators, chemical dosing pumps, water tankers, and other equipment. . . . I urge you to weigh your decision against the disease and death that are the unavoidable result of not having safe drinking water and minimum levels of sanitation."

For more than ten years, the United States has deliberately pursued a policy of destroying the water treatment system of Iraq, knowing full well the cost in Iraqi lives. The United Nations has estimated that more than 500,000 Iraqi children have died as a result of sanctions, and that 5,000 Iraqi children continue to die every month for this reason.

No one can say that the United States didn't know what it was doing. saline," the document states. "With no domestic sources of both water treatment replacement parts and some essential chemicals, Iraq will continue attempts to circumvent United Nations Sanctions to import these vital commodities. Failing to secure supplies will result in a shortage of pure drinking water for much of the population. This could lead to increased incidences, if not epidemics, of disease."

The document goes into great technical detail about the sources and quality of Iraq's water supply. The quality of untreated water "generally is poor," and drinking such water "could result in diarrhea," the document says. It notes that Iraq's rivers "contain biological materials, pollutants, and are laden with bacteria. Unless the water is purified with chlorine, epidemics of such diseases as cholera, hepatitis, and typhoid could occur."

The document notes that the importation of chlorine "has been embargoed" by sanctions. "Recent reports indicate the chlorine supply is critically low."

Food and medicine will also be affected, the document states. "Food processing, electronic, and, particularly, pharmaceutical plants require extremely pure water that is free from biological contaminants," it says.

The document addresses possible Iraqi countermeasures to obtain drinkable water despite sanctions.

"Iraq conceivably could truck water from the mountain reservoirs to urban areas. But the capability to gain significant quantities is extremely limited," the document states. "The amount of pipe on hand and the lack of pumping stations would limit laying pipelines to these reservoirs. Moreover, without chlorine purification, the water still would contain biological pollutants. Some affluent Iraqis could obtain their own minimally adequate supply of good quality water from Northern Iraqi sources. If boiled, the water could be safely consumed. Poorer Iraqis and industries requiring large quantities of pure water would not be able to meet their needs."

The document also discounted the possibility of Iraqis using rainwater. "Precipitation occurs in Iraq during the winter and spring, but it falls primarily in the northern mountains," it says. "Sporadic rains, sometimes heavy, fall over the lower plains. But Iraq could not rely on rain to provide adequate pure water."

As an alternative, "Iraq could try convincing the United Nations or individual countries to exempt water treatment supplies from sanctions for humanitarian reasons," the document says. "It probably also is attempting to purchase supplies by using some sympathetic countries as fronts. If such attempts fail, Iraqi alternatives are not adequate for their national requirements."

In cold language, the document spells out what is in store: "Iraq will suffer increasing shortages of purified water because of the lack of required chemicals and desalination

membranes. Incidences of disease, including possible epidemics, will become probable unless the population were careful to boil water."

The document gives a timetable for the destruction of Iraq's water supplies. "Iraq's overall water treatment capability will suffer a slow decline, rather than a precipitous halt," it says. "Although Iraq is already experiencing a loss of water treatment capability, it probably will take at least six months (to June 1991) before the system is fully degraded."

This document, which was partially declassified but unpublicized in 1995, can be found on the Pentagon's web site at www.gulflink.osd.mil. (I disclosed this document last fall. But the news media showed little interest in it. The only reporters I know of who wrote lengthy stories on it were Felicity Arbuthnot in the Sunday Herald of Scotland, who broke the story, and Charlie Reese of the Orlando Sentinel, who did a follow-up.)

Recently, I have come across other DIA documents that confirm the Pentagon's monitoring of the degradation of Iraq's water supply. These documents have not been publicized until now.

The first one in this batch is called "Disease Information", and is also dated January 22, 1991. At the top, it says, "Subject: Effects of Bombing on Disease Occurrence in Baghdad." The analysis is blunt: "Increased incidence of diseases will be attributable to degradation of normal preventive medicine, waste disposal, water purification/distribution, electricity, and decreased ability to control disease outbreaks. Any urban area in Iraq that has received infrastructure damage will have similar problems."

The document proceeds to itemize the likely outbreaks. It mentions "acute diarrhea" brought on by bacteria such as E. coli, shigella, and salmonella, or by protozoa such as giardia, which will affect "particularly children," or by rotavirus, which will also affect "particularly children," a phrase it puts in parentheses. And it cites the possibilities of typhoid and cholera outbreaks.

The document warns that the Iraqi government may "blame the United States for public health problems created by the military conflict."

The second DIA document, "Disease Outbreaks in Iraq," is dated February 21, 1990, but the year is clearly a typo and should be 1991. It states: "Conditions are favorable for communicable disease outbreaks, particularly in major urban areas affected by coalition bombing." It adds: "Infectious disease prevalence in major Iraqi urban areas targeted by coalition bombing (Baghdad, Basrah) undoubtedly has increased since the beginning of Desert Storm. . . . Current public health problems are attributable to the reduction of normal preventive medicine, waste disposal, water purification and distribution, electricity, and the decreased ability to control disease outbreaks."

This document lists the "most likely diseases during next sixty-ninety days (descending order): diarrheal diseases (particularly children); acute respiratory illnesses (colds and

influenza); typhoid; hepatitis A (particularly children); measles, diphtheria, and pertussis (particularly children); meningitis, including meningococcal (particularly children); cholera (possible, but less likely)."

Like the previous document, this one warns that the Iraqi government might "propagandize increases of endemic diseases."

The third document in this series, "Medical Problems in Iraq", is dated March 15, 1991. It says: "Communicable diseases in Baghdad are more widespread than usually observed during this time of the year and are linked to the poor sanitary conditions (contaminated water supplies and improper sewage disposal) resulting from the war. According to a United Nations Children's Fund (UNICEF)/World Health Organization report, the quantity of potable water is less than 5 percent of the original supply, there are no operational water and sewage treatment plants, and the reported incidence of diarrhea is four times above normal levels. Additionally, respiratory infections are on the rise. Children particularly have been affected by these diseases."

Perhaps to put a gloss on things, the document states, "There are indications that the situation is improving and that the population is coping with the degraded conditions." But it adds: "Conditions in Baghdad remain favorable for communicable disease outbreaks."

The fourth document, "Status of Disease at Refugee Camps," is dated May 1991. The summary says, "Cholera and measles have emerged at refugee camps. Further infectious diseases will spread due to inadequate water treatment and poor sanitation."

The reason for this outbreak is clearly stated again. "The main causes of infectious diseases, particularly diarrhea, dysentery, and upper respiratory problems, are poor sanitation and unclean water. These diseases primarily afflict the old and young children."

The fifth document, "Health Conditions in Iraq, June 1991," is still heavily censored. All I can make out is that the DIA sent a source "to assess health conditions and determine the most critical medical needs of Iraq. Source observed that Iraqi medical system was in considerable disarray, medical facilities had been extensively looted, and almost all medicines were in critically short supply."

In one refugee camp, the document says, "at least 80 percent of the population" has diarrhea. At this same camp, named Cukurca, "cholera, hepatitis type B, and measles have broken out."

The protein deficiency disease kwashiorkor was observed in Iraq "for the first time," the document adds. "Gastroenteritis was killing children. . . . In the south, 80 percent of the deaths were children (with the exception of Al Amarah, where 60 percent of deaths were children)."

The final document is "Iraq: Assessment of Current Health Threats and Capabilities," and it is dated November 15, 1991. This one has a distinct damage-control feel to it.

Here is how it begins: "Restoration of Iraq's public health services and shortages of major medical materiel remain dominant international concerns. Both issues apparently are being exploited by Saddam Hussein in an effort to keep public opinion firmly against the U.S. and its Coalition allies and to direct blame away from the Iraqi government."

It minimizes the extent of the damage. "Although current countrywide infectious disease incidence in Iraq is higher than it was before the Gulf War, it is not at the catastrophic levels that some groups predicted. The Iraqi regime will continue to exploit disease incidence data for its own political purposes."

And it places the blame squarely on Saddam Hussein. "Iraq's medical supply shortages are the result of the central government's stockpiling, selective distribution, and exploitation of domestic and international relief medical resources." It adds: "Resumption of public health programs . . . depends completely on the Iraqi government."

As these documents illustrate, the United States knew sanctions had the capacity to devastate the water treatment system of Iraq. It knew what the consequences would be: increased outbreaks of disease and high rates of child mortality. And it was more concerned about the public relations nightmare for Washington than the actual nightmare that the sanctions created for innocent Iraqis.

The Geneva Convention is absolutely clear. In a 1979 protocol relating to the "protection of victims of international armed conflicts," Article 54, it states: "It is prohibited to attack, destroy, remove, or render useless objects indispensable to the survival of the civilian population, such as foodstuffs, crops, livestock, drinking water installations and supplies, and irrigation works, for the specific purpose of denying them for their sustenance value to the civilian population or to the adverse Party, whatever the motive, whether in order to starve out civilians, to cause them to move away, or for any other motive."

But that is precisely what the U.S. government did, with malice aforethought. It "destroyed, removed, or rendered useless" Iraq's "drinking water installations and supplies." The sanctions, imposed for a decade largely at the insistence of the United States, constitute a violation of the Geneva Convention. They amount to a systematic effort to, in the DIA's own words, "fully degrade" Iraq's water sources.

At a House hearing on June 7, Representative Cynthia McKinney, Democrat of Georgia, referred to the document "Iraq Water Treatment Vulnerabilities" and said: "Attacking the Iraqi public drinking water supply flagrantly targets civilians and is a violation of the Geneva Convention and of the fundamental laws of civilized nations."

Over the last decade, Washington extended the toll by continuing to withhold approval for Iraq to import the few chemicals and items of equipment it needed in order to clean up its water supply.

Last summer, Representative Tony Hall, Democrat of Ohio, wrote to then-Secretary of State Madeleine Albright "about the profound effects of the increasing deterioration of Iraq's water supply and sanitation systems on its children's health." Hall wrote, "The prime killer of children under five years of age--diarrheal diseases--has reached epidemic proportions, and they now strike four times more often than they did in 1990. . . . Holds on contracts for the water and sanitation sector are a prime reason for the increases in sickness and death. Of the eighteen contracts, all but one hold was placed by the U.S. government. The contracts are for purification chemicals, chlorinators, chemical dosing pumps, water tankers, and other equipment. . . . I urge you to weigh your decision against the disease and death that are the unavoidable result of not having safe drinking water and minimum levels of sanitation."

For more than ten years, the United States has deliberately pursued a policy of destroying the water treatment system of Iraq, knowing full well the cost in Iraqi lives. The United Nations has estimated that more than 500,000 Iraqi children have died as a result of sanctions, and that 5,000 Iraqi children continue to die every month for this reason.

No one can say that the United States didn't know what it was doing.

---

http://www.hiddenmysteries.org/news/america/usa/111101a.html

IRAQ WATER TREATMMENT VULNERABILITIES (U)

Filename:511rept.91

DTG: 221900Z JAN 91

FM: DIA WASHINGTON DC
VIA: NMIST NET
TO: CENTCOM
INFO: CENTAF
UK STRIKE COMMAND
MARCENT
18 ABC
NAVCENT
SOCCENT
7TH CORPS
ANKARA

SUBJECT: IRAQ WATER TREATMMENT VULNERABILITIES (U)
AS OF 18 JAN 91 KEY JUDGMENTS.

1. IRAO DEPENDS ON IMPORTING-SPECIALIZED EQUIPMENT-AND SOME CHEMICALS TO PURIFY ITS WATER SUPPLY, MOST OF WHICH IS HEAVILY MINERALIZED AND FREQUENTLY BRACKISH TO SALINE.
2. WITH NO DOMESTIC SOURCES OF BOTH WATER TREATMENT REPLACEMENT PARTS AND SOME ESSENTIAL CHEMICALS, IRAO WILL CONTINUE ATTEMPTS TO CIRCUMVENT UNITED NATIONS SANCTIONS TO IMPORT THESE VITAL COMMODITIES.
3. FAILING TO SECURE SUPPLIES WILL RESULT IN A SHORTAGE OF PURE DRINKING WATER FOR MUCH OF THE POPULATION. THIS COULD LEAD
TO INCREASED INCIDENCES, IF NOT EPIDEMICS, OF DISEASE AND TO CERTAIN PURE-WATER-DEPENDENT INDUSTRIES BECOMING INCAPACITATED, INCLUDING PETRO CHEMICALS, FERTILIZERS, PETROLEUM REFINING, ELECTRONICS,PHARMACEUTICALS, FOOD PROCESSING, TEXTILES, CONCRETE
CONSTRUCTION,AND THERMAL POWERPLANTS.
4. IRAQ'S OVERALL WATER TREATMENT CAPABILITY WILL SUFFER A SLOW DECLINE, RATHER THAN A PRECIPITOUS HALT, AS DWINDLING SUPPLIES AND CANNIBALIZED PARTS ARE CONCENTRATED AT HIGHER PRIORITY LOCATIONS. ALTHOUGH IRAQ IS ALREADY EXPERIENCING A LOSS OF WATERTREATMENT CAPABILITY, IT PROBABLY WILL TAKE AT LEAST SIX MONTHS (TO JUNE 1991) BEFORE THE SYSTEM IS FULLY DEGRADED.
5. UNLESS WATER TREATMENT SUPPLIES ARE EXEMPTED FROM THE UNSANCTIONS FOR HUMANITARIAN REASONS, NO ADEQUATE SOLUTION EXISTS FOR IRAQ'S WATER PURIFICATION DILEMMA, SINCE NO SUITABLE ALTERNATIVES,INCLUDING LOOTING SUPPLIES FROM KUWAIT, SUFFICIENTLY MEET IRAQI NEEDS.)
6. IRAQI WATER QUALITY. SURFACE WATER FROM THE TIGRIS AND EUPHRATES RIVER SYSTEM SUPPLIES ABOUT HALF OF IRAQ'S LAND AREA,INCLUDING URBAN AREAS AND THEIR ASSOCIATED INDUSTRIES. IRAQ'S REMAINING AREA, PRIMARILY RURAL, RELIES ON GROUND WATER FROM WELLS.THE QUALITY OF UNTREATED WATER THROUGHOUT THE COUNTRY VARIES WIDELY BUT GENERALLY IS POOR. HEAVY MINERALIZATION, SUSPENDED SOLIDS AND,FREQUENTLY, HIGH SALINITY CHARACTERIZE IRAQ'S WATER SUPPLY.ALTHoUGH IRAQ HAS MADE A CONSIDERABLE EFFORT TO SUPPLY PURE WATER TO ITS POPULATION, THE WATER TREATMENT SYSTEM WAS UNRELIABLE EVEN BEFORE THE UNITED NATIONS SANCTIONS SALINITY CHARACTERIZE IRAO'S WATER SUPPLY.ALTHOUGH IRAQ HAS MADE A CONSIDERABLE EFFORT TO SUPPLY PURE WATER TO ITS POPULATION, THE WATER TREATMENT SYSTEM WAS UNRELIABLE EVEN BEFORE THE UNITED NATIONS SANCTIONS WERE IMPOSED. MOST IRAQIS PREFER TO DRINK IMPORTED BOTTLED WATER.
7. THE MINERALS IN THE WATER INCLUDE CONCENTRATIONS OF CARBONATES, SULPHATES, CHLORIDES, AND, IN SOME LOCATIONS, NITRATES.DRINKING HEAVILY MINERALIZED WATER COULD RESULT IN DIARRHEA AND,OVER THE LONG TERM, STONES FORMING WITHIN THE

BODY. FOR INDUSTRIAL APPLICATIONS, PIPES AND OTHER EOUIPMENT WOULD SCALE (BECOME ENCRUSTED), EVENTUALLY CAUSING PLANTS TO SHUT DOWN. SCALING IN BOILERS WOULD CAUSE EXPLOSIONS IF NOT PREVENTED OR REMOVED.

8. MUCH OF IRAO'S GROUND WATER SUPPLIES ARE BRACKISH TO SALINE. THE,LARGE RESERVOIRS NEAR BAGHDAD--THE THARTHAR, - HABBANIYAH, AND AL MILH LAKES--ARE SALINE. SINCE THESE LAKES SERVE AS CATCH BASINS FOR FLOODS ON THE TIGRIS AND EUPHRATES RIVERS, THE IRAOIS MUST REDUCE THE WATER VOLUME IN-THE LAKES DURING THE LOW-WATER SEASON. EVAPARATlON DURING THE SUMMER

-

**ACCOMPLISHES THIS IMPART. SINCE REDUCING THE WATER VOLUME IN THE LAKES ONLY INCREASES SALINITY, THE IRAQIS FLUSH THE LAKES BY DIVERTING FRESH WATER FROM UP STREAM ON THE TIGRIS AND EUPHRATES. THE FLOW IS DISCHARGED FURTHER DOWNSTREAM TO AVOID FILLING THE BASINS. SINCE THE DISCHARGE OCCURS WHERE THE RIVERS ENTER THE MESOPOTAMIAN PLAIN, THE DISCHARGE INCREASES THE NATURAL SALINITY OF THE WATERS DOWNSTREAM, AFFECTING IRRIGATED AGRICULTURAL LANDS IRAQ SPECIALIZES IN -
SALINE-RESISTANT CROPS SUCH AS BARLEr AND DATES) AND URBAN AREAS, INCLUDING BAGHDAD.THE KARKH WATER TREATMENT PROJECT FOR WESTERN BAGHDAD HAS AN IN TAKE POINT ABOUT 40 KILOMETERS NORTH OF BAGHDAD, UPSTREAM FROM WHERE LAKE THARTHAR DISCHARGES INTO THE TIGRIS. WATER BELOW THE DISCHARGE POINT REQUIRES DESALINIZATION.**

9. AT BASRAH, THE SHATT AL ARAB TENDS TO BE SALINE UNDER CONDITIONS OF LOW-RIVER WATER VOLUMES AND DEPENDING ON TIDE AND WIND DIRECTIONS. NORMALLY, THE SHATT AL ARAB AT BASRAH HAS A SALINITY OF 1,500 TO 2,000 PARTS PER MILLION (PPM). SALINITY HAS BEEN INCREASING OVER THE LAST 5 YEARS, AND IN THE FALL 1989, THE SALINITY HAD REACHED 6,000 TO 7,000 PPM, HIGHER THAN EXISTING DESALINIZATION SYSTEMS COULD HANDLE. (OCEAN SEAWATER IS ABOUT 36,000 PPM OF DISSOLVED SALTS; THE PERSIAN GULF IS APPROXIMATELY 42,000 PPM.BRACKISH WATER IS A MINIMUM OF 1,000 PPM. THE WORLD HEALTH ORGANIZATION STANDARD FOR HUMAN CONSUMPTION IS 500 PPM OR LESS.GROUND WATER IN IRAO'S LOWER MESOPOTAMIAN BASIN RANGES FROM 5,000 TO 60,000 PPM, WITH SOME LOCATIONS REACHING 80,000). SALINE WATER IS UNFIT FOR DRINKING AND CORRODES INDUSTRIAL PIPES OR OTHER EXPOSED EQUIPMENT.

10. (U) SUSPENDED SOLIDS, PRIMARILY SILT, IN THE TIGRIS AND EUPHRATES RIVER SYSTEM INCREASE WITH WATER VOLUME. UNLESS REMOVED FROM THE WATER, THESE PARTICLES WOULD CLOG PIPES AND FILTERS AND WOULD REQUIRE STRAINING BEFORE CONSUMPTION BY END USERS.

11. IRAQ'S RIVERS ALSO CONTAIN BIOLOGICAL MATERIALS, POLLUTANTS, AND ARE LADEN WITH BACTERIA. UNLESS THE

WATER IS PURIFIED WITH CHLORINE EPIDEMICS OF SUCH DISEASES AS CHOLERA,HEPATITIS, AND TYPHOID COULD OCCUR.)
12. WATER TREATMENT REGIMES. WATER TREATMENT IS SPECIFIC TO THE IMPURITIES OF THE WATER TREATED AND TO THE APPLICATION FOR WHICH THE WATER WILL BE USED. THE BASIC PROCESS REQUIRES CLARIFICATION (REMOVING SUSPENDED SOLIDS), FILTRATION, AND, FOR DRINKING AND SOME INDUSTRIAL USES, PURIFICATION. IN IRAQ, THE PROCESS ALSO INCLUDES DESALINATING AND WATER SOFTENING.
13. CLARIFICATION REQUIRES ADDING FLOCCULANTS AND COAGULANTS TO THE WATER. THE IRAOIS USE ALUMINUM SULPHATE ALTHOUGH IRON SULPHATES ARE ACCEPTABLE TO BIND THE SUSPENDED SOLIDS INTO CLUMPS FOR SETTLING. IF NOT REMOVED, THE SEDIMENTS, OR SLUDGE, WOULD CLOG THE FILTRATION SYSTEM (PROBABLY SAND) AND SHUT DOWN THE WATER PURIFICATION PLANT UNTIL THE CLOGS WERE REMOVED. ALUMINUM SULPHATE SUPPLY LEVELS ARE KNOWN TO BE CRITICALLY LOW, SINCE IRAQ TRIED AND FAILED TO OBTAIN PRECURSOR CHEMICALS FROM JORDAN FOR ITS MANUFACTURE.
14. CHLORINATION NORMALY IS ACCOMPLISHED DURING SEVERAL STAGES OF PURIFICATION, INCLUDING THE INITAL TREATMENT STAGE TO PREVENT THE EQUIPMENT FROM LIMING AND TO KILL PATHOGENS JUST PRIOR TO STORING THE FULLY TREATED WATER. THE CHLORINE USED IN MOST PLANTS IS EITHER SODIUM HYPOCHLORITE, A LIOUID, OR CALCIUM HYPOCHLORITE, A POWDER. IF THEY ARE EQUIPPED WITH INJECTORS, LOW-CAPACITY PLANTS CAN USE CHLORINE GAS DIRECTLY. IRAO'S PLANT IN FALLUJA AND THE PC-I PETROCHEMICAL PLANT AT BASRAH PRODUCE SODIUM HYPOCHLORITE AND, AS A BY-PRODUCT, CAUSTIC SODA, WHICH IS USED TO ADJUST THE PH OF WATER SUPPLIES. NORMALLY, BOTH LOCATIONS PRODUCE RELATIVELY SMALL QUANTITIES OF CHLORINE FOR INDUSTRIAL AND SOME MUNICIPAL USE; CHLORINE FOR MUNICIPAL SUPPLIES ALSO IS IMPORTED.RECENT REPORTS INDICATE THE CHLORINE SUPPLY IS CRITICALLY LOW. ITS IMPORTATION HAS BEEN EMBARGOED, AND BOTH MAIN PRODUCTION PLANTS EITHER HAD BEEN SHUT DOWN FOR A TIME OR HAVE BEEN PRODUCING MINIMAL OUTPUTS BECAUSE OF THE LACK OF IMPORTED CHEMICALS AND THE INABILITY TO REPLACE PARTS. PREVIOUSLY WHEN SUPPLIES WERE LOW, THE IRAQI SHAVE STOPPED CHLORINATING THE DRINKING WATER, BUT ONLY FOR SHORT PERIODS. TO RETARD ALGAE GROWTH, WHICH COULD CLOG PIPES, COPPER SULPHATE NORMALLY IS ADDED TO THE WATER. BUT THIS PRACTICE HAS NOT BEEN VERIFIED IN IRAO, AND SUPPLIES OF COPPER SULPHATE ARE UNKNOWN.SULFURIC ACID TYPICALLY IS ADDED AS WELL, BUT IRAQ PROBABLY CAN PRODUCE SUFFICIENT SUPPLIES.
15. IRAQ APPARENTLY USES LIME, AT LEAST AT THE NEW KARKH TREATMENT PLANT, TO SOFTEN WATER. THE LIME PRECIPITATES COLLOIDAL CARBONATE IMPURITIES FROM THE WATER. SODA ASH AND

ZEOLITES ALSO NORMALLY ARE USED TO REMOVE NONCARBONATE MINERAL IMPURITIES, BUT THEIR USE IN IRAO HAS NOT BEEN DETERMINED. LOCAL COMPANIES SELL BOTTLED SOFT WATER IN IRAO, SUGGESTING THAT MUNICIPAL WATER SYSTEMS DO NOT NORMALLY SOFTEN WATER. IRAQ SHOULD HAVE NO SHORTAGES OF LIME. HOWEVER, THE LACK OF SOFTENING CHEMICALS REPORTEDLY HAS INCAPACITATED THE BOTTLED SOFT-WATER INDUSTRY.

16. BETWEEN 1982 AND 1990, SOME IRAOI INDUSTRIES INSTALLED REVERSIBLE ION EXCHANGE ELECTRODIALYSIS MEMBRANE SYSTEMS, OBTAINED FROM AN AMERICAN SOURCE, TO SOFTEN AND DESALINATE WATER. THE MEMBRANES LAST 5 TO 7 YEARS AND DO NOT REQUIRE CHEMICAL PRETREATMENT OF THE WATER. THEY NORMALLY SERVE SMALLER VOLUME REQUIREMENTS.HOWEVER, A MAJOR OIL REFINERY, AL DAURA IN BAGHDAD, INSTALLED THIS SYSTEM IN 1985, AND IT PRODUCES 24,000 CUBIC METERS OF PURIFIED WATER PER DAY.

17. ABOUT ONE QUARTER OF ALL IRAOI WATER SUPPLIED FOR INDUSTRIAL AND HUMAN CONSUMPTION REQUIRES DESALINIZATION. IRAO RELIES ALMOST EXCLUSIVELY ON ION EXCHANGE OR REVERSE OSMOSIS SYSTEMS RATHER THAN MULTISTAGE FLASH UNITS. ION EXCHANGE AND REVERSE OSMOSIS MEMBRANES ARE SPECIFIC TO THE TYPE OF EQUIPMENT OF WHICH THEY ARE A COMPONENT, AS ARE THE CHEMICALS REOUIRED. PREVIOUS IRAQI USE OF SUBSTITUTES HAS NOT BEEN SATISFACTORY. IRAO REPORTEDLY DEPENDS ON IMPORTED MEMBRANES AND IMPORTS CHEMICALS FROM SEVERAL SOURCES. IRAQ HAD NOT COMPLETED THE MAJOR PURCHASE AND DELIVERY OF SPARE MEMBRANES BEFORE INVADING KUWAIT. ATTEMPTS TO PROCURE MEMBRANES SINCE THE UN SANCTIONS WERE IMPOSED HAVE FAILED. SINCE THE ATTEMPT TO IMPORT MEMBRANES CORRESPONED TO THEIR NORMAL REPLACEMENT PERIOD, IRAQ APPARENTLY DID NOT STOCKPILE ABUNDANT SPACE MEMBRANES OR CHEMICALS AND PROBABLY HAD NO MORE THAN A 2-MONTH SUPPLY PRIOR TO THE INVASION.

18. POLYAMIDE MEMBRANES WHICH IRAO USES IN SOME DESALINIZATION EOUIPMENT, DETERIORATE WHEN EXPOSED TO CHLORINE IONS.PRIOR TO PASSING THROUGH THE MEMBRANE, WAT-ER IS TREATED WITH SODIUM METABISULPHITE TO REMOVE THE CHLORINE USED IN PRETREATMENT. THE CHLORINE THEN IS RE-STORED FOR LATER PURIFICATION. THE STATUS OF SODIUM METABISULPHITE SUPPLIES IS NOT KNOWN, BUT SUPPLIES PROBABLY ARE DWINDLING, WHICH WILL ESCALATE FAILURES OF THIS MEMBRANE TYPE.IRAO ALSO USES CELLULOSE ACETATE MEMBRANES (AN OLD TECHNOLOGY),WHICH HAVE AN EXCEPTIONALLY SHORT LIFE AND ARE SUSCEPTIBLE TO BIOLOGICAL CONTAMINATION. IRAO REPORTEDLY CAN MANUFACTURE CELLULOSE MEMBRANES, BUT THE AVAILABILITY OF PRECURSOR STOCKS IS PROBABLY LOW.IRAQ HAD BEEN ACOUIRING REVERSE ELECTRODIALYSIS ION EXCHANGE MEMBRANES PRIOR TO THE UN SANCTIONS. HOWEVER, MOST SYSTEMS USE REVERSE OSMOSIS OR UNIDIRECTIONAL ELECTRODIALYSIS, WHICH, UNLIKE REVERSE

ELECTRODIALYSIS MEMBRANES, REOUIRE CHEMICALS TO MAKE THEM WORK.)
19. INDUSTRIAL WATER TREATMENT. INDUSTRIES REQUIRE TREATED WATER, AND THE TYPE OF TREATMENT DEPENDS ON THE APPLICATION. NORMALLY, SOFTENING AND DESALINIZATION ARE REOUIRED TO PREVENT PIPE SAND EOUIPMENT FROM CORRODING OR SCALING. IN THE PETRO CHEMICAL INDUSTRY, WATER USED FOR COOLING IS PARTIALLY TREATED TO PREVENT SCALING. WATER USED IN THERMAL POWERPLANTS OR REFINERIES TO PRODUCE STEAM MUST BE PURE TO PREVENT BOTH CORROSION AND SCALING.OTHERWISE, LOSS OF CAPABILITY COULD OCCUR WITHIN 2 MONTHS. IN ADDITION, FOOD PROCESSING, ELECTRONIC, AND, PARTICULARLY,PHARMACEUTICAL PLANTS REOUIRE EXTREMELY PURE WATER THAT IS FREE FROM BIOLOGICAL CONTAMINANTS. LARGE INDUSTRIAL PLANTS, INCLUDING PETROCHEMICAL, REFINING, AND FERTILIZER PLANTS, COLLOCATE THEIR WATER TREATMENT FACILITIES. TURNKEY CONTRACTORS BUILT THESE FACILITIES, AND THE PARTS ARE SPECIFIC TO EACH SYSTEM, WHICH COMPLICATES THEIR REPLACEMENT. THE IRAOIS COULD NOT MANUFACTURE DUPLICATES AND THEIR IMPORTATION IS EMBARGOED.)
20. IRAQI ALTERNATIVES. IRAQ COULD TRY CONVINCING THE UNITED NATIONS OR INDIVIDUAL COUNTRIES TO EXEMPT WATER TREATMENT SUPPLIES FROM SANCTIONS FOR HUMANITARIAN REASONS. IT PROBABLY ALSO IS ATTEMPTING TO PURCHASE SUPPLIES BY USING SOME SYMPATHETIC COUNTRIES AS FRONTS. IF SUCH ATTEMPTS FAIL, IRAQI ALTERNATIVES ARE NOT ADEOUATE FOR THEIR NATIONAL REOUIREMENTS.
21. VARIOUS IRAOI INDUSTRIES HAVE WATER TREATMENT CHEMICAL SAND EQUIPMENT ON HAND, IF THEY HAVE NOT ALREADY BEEN CONSUMED OR BROKEN. IRAO POSSIBLY COULD CANNIBALIZE PARTS OR ENTIRE SYSTEMS FROM LOWER TO HIGHER PRIORITY PLANTS, AS WELL AS DIVERT CHEMICALS,SUCH AS CHLORINE. HOWEVER, THIS CAPABILITY WOULD BE LIMITED AND TEMPORARY. IRAQ PREVIOUSLY HAD ACQUIRED SEVERAL HUNDRED CONTAINERIZED REVERSE OSMOSIS MODULES FOR LOCALIZED USE THAT COULD BE RELOCATED. WITHOUT CHEMICALS AND REPLACEMENT MEMBRANES, THESE UNITS WHERE EVENTUALLY WOULD BECOME USELESS. HOWEVER, CONSOLIDATING CHEMICALS OR CANNIBALIZING PARTS AND MOVING UNITS WHERE NECESSARY COULD SUSTAIN SOME PURIFICATION OPERATIONS INDUSTRIAL PLANTS THAT ARE INOPERABLE FOR REASONS-OTHER THAN THE LACK OF WATER TREATMENT SUPPLIES COULD PROCESS WATER FOR MUNICIPAL NEEDS OR POSSIBLY RELOCATE THEIR PURIFICATION EOUIPMENT.
22. THE DIFFERENCE IN WATER TREATMENT SYSTEMS LIMITS THE BENEFITS TO IRAQ OF PLUNDERING KUWAIT'S WATER TREATMENT CHEMICALS. THE KUWAITIS RELY PRIMARILY ON DESALINATING SEAWATER, AND THEIR WATER NEEDS ARE CONSIDERABLY SMALLER THAN IRAQ'S. IRAQ COULD NOT USE CHEMICALS INTENDED FOR KUWAITI WATER TREATMENT SYSTEMS, EXCEPT FOR LIMITED

QUANTITIES OF CHLORINE. ATTEMPTS TO CIRCUMVENT THE SANCTIONS TO OBTAIN WATER TREATMENT CHEMICALS SUGGEST THAT ANY USEFUL SUPPLIES FROM KUWAIT ALREADY HAVE BEEN LOOTED AND USED.

23. IRAO HAS INSTALLED A PIPELINE FROM THE DOHA DESALINIZATION PLANT IN KUWAIT THAT CONNECTS WITH DISTRIBUTION PIPES AT A WATERTREATMENT PLANT NEAR BASRAH. THIS SOURCE OF PURE WATER APPARENTLY HAS ENABLED THE PC-I PETROCHEMICAL PLANT TO OPERATE AND TO PRODUCE CHLORINE BY ELECTROLYSIS OF KUWAITI WATER MIXED WITH PURE SODIUM CHLORIDE. AT LEAST SOME OF THIS CHLORINE PROBABLY IS USED FOR MUNICIPAL WATER PURIFICATION, BUT THE OUANTITY PRODUCED WOULD BE INADEOUATE FOR NATIONAL REOUIREMENTS. MOREOVER, SOME OF THE CHLORINE PROBABLY IS USED AT THE PC-I PLANT TO MAKE POLYVINYL CHLORIDES TO CREATE THE PLASTIC SHEETS USED IN AGRICULTURAL PRODUCTION. THE USE OF KUWAITI WATER PROBABLY WILL NOT LAST LONG SINCE THE DOHA PLANT USES THE MULTISTAGE FLASH DESALINIZATION PROCESS, WHICH REOUIRES ACID DOSING OR THE ADDITION OF POLYMERS TO PREVENT SCALING OF THE HEAT EXCHANGES. THE UN SANCTIONS MAY PREVENT RESUPPLY OF THESE CHEMICALS. INTENSIVE MAINTENANCE ALSO IS REOUIRED TO KEEP THE UNITS OPERATING, AND THAT PROBABLY WOULD REOUIRE THE SERVICES OF TRAINED KUWAITI EMPLOYEES SINCE IRAQ HAS LITTLE EXPERIENCE WITH MULTISTAGE FLASH UNITS.

24. IRAQ'S BEST SOURCES OF QUALITY WATER ARE IN THE MOUNTAINS OF THE NORTH AND NORTHEAST, WHERE MINERALIZATION AND SALINITY ARE WITHIN ACCEPTABLE LIMITS. FOR THE SHORT TERM, IRAO CONCEIVABLY COULD TRUCK WATER FROM THE MOUNTAIN RESERVOIRS TO URBAN AREAS. BUT THE CAPABILITY TO GAIN SIGNIFICANT QUANTITIES IS EXTREMELY LIMITED. THE AMOUNT OF PIPE ON HAND AND THE LACK OF PUMPING STATIONS WOULD LIMIT LAYING PIPELINES TO THESE RESERVOIRS. MOREOVER, WITHOUT CHLORINE PURIFICATION, THE WATER STILL WOULD CONTAIN BIOLOGICAL POLLUTANTS. SOME AFFLUENT IRAQIS COULD OBTAIN THEIR OWN MINIMALLY ADEQUATE SUPPLY OF GOOD OUALITY WATER FROM NORTHERN IRAOI SOURCES.IF BOILED, THE WATER COULD BE SAFELY CONSUMED. POORER IRAQIS AND INDUSTRIES REQUIRING LARGE OUANTITIES OF PURE WATER WOULD NOT BE ABLE TO MEET THEIR NEEDS.

25. PRECIPITATION OCCURS IN IRAQ DURING THE WINTER AND SPRING,BUT IT FALLS PRIMARILY IN THE NORTHERN MOUNTAINS. SPORADIC RAINS,SOMETIMES HEAVY , FALL OVER THE LOWER PLAINS. BUT IRAQ COULD NOT RELY ON RAIN TO PROVIDE ADEQUATE PURE WATER.

26. THE SALINE OR ALKALINE CONTENT-OF GROUND WATER IN MOST LOCATIONS WOULD CONSTRAIN DRILLING WELLS IN THE MESOPOTAMIAN PLAIN TO OBTAIN PURER WATER MOREOVER, MUCH OF THE POPULATION USES SEPTIC TANKS, AND THE UNDERLYING GEOLOGY AND TOPOGRAPHY

WOULD CONTAMINATE WELLS IN MANY LOCATIONS.))OUTLOOK)
27. IRAQ WILL SUFFER INCREASING SHORTAGES OF PURIFIED WATER BECAUSE OF THE LACK OF REOUIRED CHEMICALS AND DESALINIZATION MEMBRANES. INCIDENCES OF DISEASE, INCLUDING POSSIBLE EPIDEMICS,WILL BECOME PROBABLE UNLESS THE POPULATION WERE CAREFUL TO BOIL WATER BEFORE CONSUMPTION, PARTICULARLY SINCE THE SEWAGE TREATMENT SYSTEM, NEVER A HIGH PRIORITY, WILL SUFFER THE SAME LOSS OF CAPABILITY WITH THE LACK OF CHLORINE. LOCALLY PRODUCED FOOD AND MEDICINE COULD BE CONTAMINATED. LACK OF COAGULATION CHEMICALS WILL CAUSE PERIODIC SHUTDOWNS OF TREATMENT PLANTS FOR UNCLOGGING AND CLEANING FILTERS, CAUSING INTERRUPTIONS OF WATER SUPPLIES. AS DESALINIZATION EQUIPMENT BECOMES INOPERABLE, SALINE WATER SOURCES WILL BECOME INCREASINGLY UNUSABLE. TEMPORARY OR PERMANENT SHUT DOWNS OF INDUSTRIAL PLANTS THAT RELY ON TREATED WATER WILL MULTIPLY.CANNIBALIZING LOWER PRIORITY OPERATIONS WILL ACCELERATE THE TREND.
28. THE ENTIRE IRAOI WATER TREATMENT SYSTEM WILL NOT COLLAPSE PRECIPITOUSLY, BUT ITS CAPABILITIES WILL DECLINE STEADILY AS DWINDLING SUPPLIES INCREASINGLY ARE DIVERTED TO HIGHER PRIORITY SITES WITH COMPATIBLE EQUIPMENT. KARKH, IRAO'S LARGEST WATERTREATMENT PLANT (AND ONE OF THE WORLD'S LARGEST), WAS DESIGNED TO STORE 30 DAYS OF SUPPLIES ON SITE. THE QUANTITY OF SUPPLIES, IF ANY, NORMALLY STOCKPILED IN CENTRALIZED WAREHOUSES BEFORE SHIPMENT TO TREATMENT PLANTS IS UNKNOWN, BUT A 6 MONTH TO I YEAR SUPPLY OF CHEMICALS IS THE NORMAL INDUSTRIAL PRACTICE. HOWEVER, CURRENT IRAQI EFFORTS TO OBTAIN CHEMICALS AND MEMBRANES AND THE INSTALLATION OF A PIPELINE TO OBTAIN PURE KUWAITI WATER SUGGEST THAT THERE WAS NOT ADEOUATE STOCKPILING PRIOR TO THE INVASION OF KUWAIT. SOME CHEMICALS ARE DEPLETED OR ARE NEARING DEPLETION, AND OLDER MEMBRANES ARE NOT BEING REPLACED ON SCHEDULE. CONSEOUENTLY, IRAQ PROBABLY IS USING UNTREATED OR PARTIALLY TREATED WATER IN SOME LOCATIONS. FULL DEGRADATION OF THE WATER TREATMENT SYSTEM

PROBABLY WILL TAKE AT LEAST ANOTHER 6 MONTHS.

[(b)(2)]

http://www.gulflink.osd.mil/

Date: Jan 91 15:18:35 EST
From:
To:
Subject: DISEASE INFORMATION

Comments: Forwarding note of Jan 91 15:17:40-EST from

From: --
***** Forwarding note from AFMICOPS--FSTCVMl 01/22/91 15:17 *****
Date: Jan 91 15:17:40 EST
Subject: DISEASE INFORMATION

From:

1. Please Pass the attached information to:
ARCENT G2
ARCENT G5
ARCENT SURGEON
[(b)(6)]

2. As this is our first attempt over this circuit, please respond upon receip

of this message.

SUBJECT: Effects of Bombing on Disease Occurrence in Baghdad

ANALYST: [(b)(6)]

DATE: JAN 91

SUMMARY: Food- and waterborne diseases have the greatest potential for outbreaks in the civilian and military population over the next 30 to 60 days.

Increased incidence of diseases will be attributable to degradation of normal preventive medicine, waste disposal, water purification/distribution, electricity, and decreased ability to control disease outbreaks. Any urban are

in Iraq that has received infrastructure damage will have similar problems.

The following diseases are prioritized in descending order of expected outbreak potential in Baghdad over the next 30 to 60 days. Prioritization is based on level of endemicity, seasonal distribution, and mode of transmission.

1. FOOD- AND WATER-BORNE DISEASES:

Disease Primary Agents/Comments

a. Acute Diarrheas Bacterial: E. coli, Shigella spp., and Salmonella spp.

Protozoal: Giardia lamblia (particularly children) and Entamoeba histolytica

Viral: Rotavirus (primarily children)

b. Typhoid/Paratyphoid Salmonella typhi, S. paratyphi

c. Cholera Difficult to assess. Poorly reported. Outbreaks possible.

NOTE: Hepatitis A (HAV) is highly endemic, and therefore causes a limited

threat to the indigenous population. -~

2. OTHER ENDEMIC DISEASES:

a. Influenza Strain A(H3N2) predominates over A(HlNl) and B.

b. Meningococcal Meningitis Group A predominates, but W135 reporting has increased. Associated with overcrowding.

c. Childhood Diseases Primarily measles, but also diphtheria and pertussis.

d. Trachoma Associated with poor personal hygiene.

e. Intestinal Helminths Primarily ascariasis, ancylostomiasis, enterobiasis, trichuriasis.

|SUBJECT: Effects of Bombing on Disease Occurrence in Baghdad

3. VECTORBORNE DISEASES: Generally, vectorborne diseases are more of a lon

term problem, with increased transmission occurring after 60 days. However, increased incidence can be expected, especially in a prolonged military campaign.

a. Louse-borne typhus Rickettsia prowazekii. Associated with poor hygiene and overcrowding, especially in winter months.

b. Leishmaniasis Primarily cutaneous form due to Leishmania tropica. Focal increase associated with debris accumulation.

c. Malaria Currently no indigenous transmission and considered a low risk. Potential vectors are present.

4. More detailed explanations on conditions affecting expected disease occurrence are available. Extrapolation of this analysis should only be done after further consultation with AFMIC analysts.

|SUBJECT: Iraq - Medical Civil Defense Preparations and BW Propoganda

[(b)(6)]
DATE: JAN 91
According to open source press releases in November and December, several Iraqi ministries delivered public health information announcements outlining precautions that civilians should be taking because of the Persian Gulf crisis

Early guidelines by the Ministry of Local Government called on citizens to avoid careless use of drinking water, such as using it for watering domestic gardens and washing cars and sidewalks". In late December, the Baghdad Domesti

Service stated that 'the enemy may resort to biological war means on human, animal, or plant targets; these germs include bacteria, viruses-, fungi, and parasites which cause malaria and dysentery". Also, the announcement provided guidelines in the following subject areas for protecting personnel, facilities food/water supplies, and crops from these biological agents:
A. Health precautions (NFI) to reduce possibility of contamination.
B. Isolation of infected persons and contaminated areas to prevent spread of disease.
C. "Sterilization" (decontamination) of infected persons and contaminated equipment and areas.
D. Proper storage of food and water to avoid contamination.
E. Plans to protect crops.

Comment: These types of statements would increase public awareness and encourage the civilian population to take additional preventive measures against health problems (such as medical shortages and disease outbreaks) that would result

from an infrastructure weakened by sanctions or military conflict
Early statements may represent a legitimate attempt by the Iraqi government to prepare the civilian population. However, as the United Nations deadline approached, the Iraqi government's tactics became more exploitative as indicated by the "biological war" announcement propagandizing a possible U.S. biological threat. (See AFMIC Weekly Wire 50-90 for additional information on similar disinformation statements.)

The government disinformation citing potential increases of endemic diseases that are not biological warfare candidates would allow the government to blame the United States for public health problems created by military conflict. Additionally, an even more subversive motive could have formed the rationale for the disinformation campaign. The statements would create a scenario that would allow the U.S. to be blamed for potential civilian biological warfare (BW) casualties resulting from Iraqi BW use or contamination by agents released as a result of damage inflicted by coalition forces on BW facilities. Military planners, particularly civil affairs and humanitarian assistance groups, and political officials should be aware of the potential for the Iraqi population to blame coalition forces for these problems.

http://www.gulflink.osd.mil/

File: 950901_0404pgf_91.txt
Page: 91
Total Pages: 1

Iraq: Assessment of Current Health Threats and Capabilities

Filename:0404pgf.91
AFMIC Assessment 05-91
15 November 1991

Armed Forces Medical Intelligence Center
Assessment

Iraq: Assessment of Current Health Threats and Capabilities

Key Judgments

Restoration of Iraq's public health services and shortages of major medical materiel remain dominant international concerns ([(b)(2)]). Both issues apparently are being exploited by Saddam Hussein in an effort to keep public opinion firmly against the U.S. and its Coalition allies and to direct blame away from the Iraqi government.

Disease incidence above pre-war levels is more attributable to the regime's inequitable post-war restoration of public health services rather than the effects of the war and United Nations (UN)-imposed sanctions. Although current countrywide infectious disease incidence in Iraq is higher than it was before the Gulf War, it is not at the catastrophic levels that some groups predicted. The Iraqi regime will continue to exploit disease incidence data for its own political purposes ([(b)(2)]).

Iraq's medical supply shortages are the result of the central government's stockpiling, selective distribution, and exploitation of domestic and international relief medical resources. These same factors will play a role in the ongoing regional incidence of post-war infectious disease.

Compared with pre-war capabilities, hospital services have been significantly reduced, with comprehensive medical care available only to the political elite, the very wealthy, and the military.

Post-war reporting indicates that Iraq may be storing nuclear, biological, and chemical (NBC) materials in or around hospitals in an attempt to conceal them [(b)(1) sec 1.3(a)(4)], [(b)(2)] . If true, the storage of these materials is contrary to basic safety tenets and poses a serious health threat to hospitalized patients and medical staff.

Public Health

[(b)(1) sec 1.3(a)(4)] that restoration of water, sewerage, and electricity services appears to be limited to select regions. While the water is dirty in appearance, water quality reportedly has improved in Baghdad. However, conditions have not improved correspondingly in Al Basrah or other Shiite-dominated southern cities and in northern Kurdish regions. Nationwide restoration of water potability has been slowed by 1) the destruction of Iraqi's chlorine production capability and 2)

the financial cost of rebuilding damaged petrochemical plants and the interim requirement of importing chloring products from aborad. Water purification systems and protable generators provided through humanitarian assistance have served, at best, as stop-gap measures. Iraq's Ministry of Health (MOH) continues to provide public health communiques instructing inhabitants to boil water, fully cook food, and store food and water in clean containers.

The MOH appears to be regaining administrative control of the nation's health care system, but restoration of nationwide public health programs apparently is not being addressed. Resumption of public health programs (such as disease surveillance, vector control, and immunization programs; food and food handler inspections; bacteriological testing of potable water sources; and local level primary health services and education) depends completely on the Iraqi government. Until these programs are fully reinstated, most Iraqi citizens will remain vulnerable to otherwise preventable diseases.

Refugee medical care remains a specific concern of international humanitarian agencies as an estimated 300,000 Iraqi refugees remain in Iran and another 24,000 are in Turkey. A number of these refugees are attempting to return to northern Iraq before cold weather returns to the region. Current reports describe an influx of 10,000 refugees per week returning from Iran. However, destruction of villages and current violence in Kurdish areas may prevent a significant number from reaching their homes, leaving them without shelter and prone to cold and other exposure-related injuries and illnesses. Moreover, warehouses containing tents, clothing, and heating supplies that were provided by the UN and other international agencies for this contingency are located in the area of current fighting. Workers at these warehouses reportedly have fled, leaving those goods unprotected from looters on both sides of the conflict. Additional humanitarian assistance for the refugees is not likely to be forthcoming from the Iraqi Government, although the plight of the refugees continues to be exploited by Baghdad.

Infectious Disease Incidence

Although current countrywide infectious disease incidence in Iraq is higher than it was prior to the Gulf War, it is not at the catastrophic levels that some groups predicted. Disease incidence above prewar levels is more attributable to the regime's inequitable post-war restoration of public health services rather than the effects of the war and UN-imposed sanctions. Recent intelligence reports from reliable sources have indicated that life in Baghdad essentially has

returned to normal, with no signs of poverty or food shortages. In contrast, increased infant and child mortality rates, evidence of child malnourishment, and poor sanitary conditions continue to plague vulnerable groups outside of Baghdad, particularly in southern Iraq.

Because the regime did not report adequate pre-war disease surveillance data and current disease reporting appears politically-biased, the current disease situation in Iraq is difficult to assess. Pre-war disease surveillance data are not available for comparison; therefore, it is unclear what amount of current disease incidence reported through the Iraqi Government reflects normal incidence levels. Recent Iraqi reports linking increased disease morbidity and mortality (particularly cholera, typhoid fever, hepatitis A, giardiasis, amebic dysentery, bruce]losis, and echinococcosis) to vaccine and medicine shortages created by the international embargo are particularly misleading. These diseases are fundamentally prevented through basic sanitation and hygiene, not public vaccinations or curative medicine. Therefore, much of the current reporting is regarded as an attempt to gain international sympathy.

In addition, morbidity and mortality forecasts publicly provided by international and private medical organizations frequently have been based on incomplete information. Baghdad has restricted the access of foreign observers, limiting the quantity and quality of collected data. Many of the early post-war estimates assumed that health and living conditions would not improve, which led to significant overestimates of projected morbidity and mortality rates. Because of the restoration of essential services and international relief efforts, the United Nations Children's Fund (UNICEF) recently reduced its estimates of Iraqi children at-risk from 170,000 children to between 50,000 and 80,000 children.

Infectious disease incidence in areas where services are restored is likely to stabilize in a range that is somewhat above pre-war levels, with discriminated groups (particularly Kurds and Shiites) sustaining substantially higher disease incidence. With the advent of winter, cases of acute respiratory infections, preventable childhood diseases (measles, diphtheria, and pertussis), and meningococcal meningitis are expected to increase significantly in populations receiving inadequate public health services. The Iraqi regime will continue to exploit the hardships of discriminated groups for its own domestic and international political purposes.

Medical Materiel

Iraq's loudly-proclaimed medical supply shortages are believed to have been artificially created. Possible evidence of Iraqi government stockpiling, selective distribution, and exploitation of domestic and international relief medical resources has been provided by [(b)(1) sec 1.3(a)(4)]
. warehouses at the Samarra Pharmaceutical Plant (34-12N 043-52E) that were between 50 and 75 percent full (including items looted from Kuwait), despite Baghdad claims the warehouses were only filled to 10 percent of capacity.
[(b)(1) sec 1.3(a)(4)] 400,000 doses of diphtheriapertussis-tetanus (DPT) vaccine from UNICEF stored at the Serum and Vaccine Institute in Amiriyia (33-18N 044-17E). Iraqi leaders are alleged to have sold, for personal profit, medical materiel and equipment donated by international humanitarian assistance groups as well as some of the medical equipment stolen from Kuwait.

The extent of Iraqi medical stores is not known but appears to be massive. A southern Iraqi medical depot, reportedly destroyed in the wake of Desert Storm, was reputed to house 10 years of medical materiel. Other large medical supply warehouses are believed to be distributed around the country. U.S. forces deployed to Dahuk (36-52N 043-00E) during Operation Provide Comfort noted that medical personnel at the Dahuk Hospital were not permitted access to a nearby warehouse filled with medical supplies. The supplies reportedly had been moved from Baghdad to protect them from Coalition bombing attacks and were to have eventually been returned to Baghdad.

[(b)(1) sec 1.3(a)(4)]

Health Care Delivery

Health care services for the majority of Iraqis are basically limited to emergency and acute care services. More comprehensive health services are believed available at the more prestigious government medical centers, select private hospitals, and sob military medical centers (most of which are situated in remote areas away from public observation). This level of health care principally is reserved only for those with substantial financial means or political connections.

The current outbreak of fighting in northern Iraq reportedly has resulted in large numbers of non-military casualties. lLocal hospitals, filled to overflowing, are incapable

of handling these casualties and heavily depend on international medical assistance. The International Red Cross is attempting to augment local health care services with medical supplies and personnel. Two, relatively-modern hospitals recently have been identified [(b)(1) sec 1.3(a)(4)] in As Sulaymaniyah, a focal point in the current fighting. One hospital appears to be a modification of the 16 identical Japanese constructed hospitals known to exist in Iraq [(b)(2)] . The other hospital is a modification of four, nearly-similar, new military hospitals.

Military casualties and medical health care capabilities have been kept secret from the public. The shroud of secrecy may be to forestall the negative public outcry that would result if Iraqis were to observe the inequitable distribution of medical services and materiel between the civilian and military sectors. There also is a possibility that a significant number of soldiers who sustained serious, long-term injuries (such as amputees and para/quadraplegics) during the Gulf War and subsequent civil war are being held out of the public eye in clandestine facilities (remote military hospitals and converted sport stadiums, hotels, and gymnasiums) around the country. This theory is supported by an unconfirmed report of an Iraqi order placed in spring 1991 with a North Korean firm for 17,000 hospital beds and 23,000 wheelchairs. The order, which is excessive given the relatively minimal destruction sustained by Iraqi health care facilities, would be appropriate for large numbers of casualties who are bedridden and/or possess limited mobility.

Overall, medical materiel shortages and delayed restoration of public utility services have contributed significantly to the reduction of Iraqi health care services from pre-war levels. Surgical and diagnostic capabilities appear to have suffered the greatest decline as the result of erratic and insufficient water and electricity services, anesthetic shortages, equipment failures, and shortages of laboratory reagents and other diagnostic support material. [(b)(1) sec 1.3(a)(4)] have reported that the Al Khadimiya Hospital in Baghdad (33-22-20N 044-19-30E), designated by Iraq as the referral facility for [(b)(1) sec 1.3(a)(4)] in the event of chemical agent exposure and believed to be the largest of the Japanese-designed hospitals constructed throughout Iraq during the mid-1980s, is incapable of performing electrolyte, arterial blood gas, and serum cholinesterase evaluations (serum cholinesterase is both a presurgical screening tool and a method of diagnosing and assessing nerve agent poisoning). Saddam Hussein Medical City in Baghdad (33-20-58N 044-22-46E), the government's premier medical center, is unable to operate its CT scan and other sophisticated

medical equipment because of repair problems, but still is believed capable of performing routine diagnostic examinations (xray, ultrasound, and laboratory).

Iraq's medical diagnostic capabilities are further degraded by lack of qualified medical maintenance technicians. Traditionally, most medical maintenance in Iraq was performed by Western contractors. Following the invasion of Kuwait, the majority of foreign workers departed Iraq and have not returned.

The reduction of diagnostic support specifically impaets the quality of surgical and other specialty services (such as orthopedics, gastroenterology, and pulmonary medicine) received by Iraqis. Although still great, the impact on the quality of emergency and other primary care services is believed to be less. Therefore, an appreciable decline in patient care in the primary care setting is more likely to result among poorly-trained physicians (believed prevalent throughout Iraq), especially those confronted with heavy workloads created by the decline in post-war public health and the civil war. Without diagnostic support, these physicians are more likely to resort to shotgun therapy, which commonly relies on multiple-drug regimens. Patient care, therefore, is further degraded by an increased probability of an erroneous diagnosis compounded by inappropriate therapy that may worsen the initial complaint. Additionally, Iraqi health care providers who practice shotgun medicine waste medical resources that already are in short supply. Iraqi health care providers serving in medical facilities that are historically poorly supported or those having experience with the health care deprivations associated with the Iran/Iraq War probably are more capable of providing astute diagnoses without the benefit of diagnostic tests than most Iraqi health care providers.

Storage of NBC Materials in Hospitals

Post-war reporting alleges that the Iraqi military is storing nuclear, biological, and chemical (NBC) materials in or around hospitals in an effort to conceal them from UN special observer teams. The health threat to patients and medical staff is borne out by Iraq's historical lack of regard concerning safe handling and storage of NBC material. Reports of accidental chemical agent exposure among Iraqi military personnel date back to the Iran/Iraq War. More recently, [(b)(1) sec 1.3(a)(4)] medical reports found at the Muthanna State Establishment (MSE; 33-49-56N 043-48-13E, also known as the Samarra Chemical Warfare Research, Production, and Storage Facility) estimate an annual chemical exposure accident rate at that facility approaching 30 percent. [(b)(1) sec 1.3(a)(4)] lack of appropriate detection equipment at Iraqi chemical production

facilities, indicating that Iraq would have a significantly limited capability to detect a chemical contamination occurring during the storage of chemical agents on or near hospital grounds. Moreover, most civilian Iraqi physicians lack the capability to diagnose signs and symptoms of chemical agent exposure.

Suspect medical facilities believed to be housing NBC material include the Saddam Hussein Medical City and the Al Rashid Hospital, both located in Baghdad (33-21N 044-25E), the Saddam Hussein General Hospital in Kirkuk (35-28N 044-23E), the Mosul Hospital 0621-28N 043-07-00E), and the Dagalah Hospital (36-09N 044-23E). There also have been unconfirmed reports of chemical warfare agents stored in the King Hussein Medical Center in Amman, Jordan (31-57N 035-56E).

Summary

Iraq is exploiting the humanitarian issue to maintain world sympathy and possibly to extend as long as possible the influx of free goods. However, Iraq is capable of reversing its current medical materiel shortages through the equitable distribution of current stockpiles, the use of proceeds from oil sales approved by the UN for humanitarian purchases, and the use of an estimated U.S. $340 million frozen in the Bank for International Settlements. Iraq has demonstrated its capability to fund high priority health care sector projects during its costly war with Iran, as evidenced by the construction of more than 20 major medical treatment facilities and the purchases of Western medicines and medical technology during that period.

http://www.gulflink.osd.mil/

Subject: DEPLETED URANIUM

b1 SEC 1.5C

**IRAQI DIPLOMATS TO DISTRIBUTE SUMMARY OF A REPORT LINKING ALLIED USE OF
DEPLETED URANIUM IN MUNITIONS TO INCREASES IN CANCER AND OTHER DISEASES:
OCTOBER 1994.**

**IRAQI DIPLOMATS IN OCTOBER 1994, WERE TO DISTRIBUTE INFORMATION ON THE
HEALTH IMPACT OF VARIOUS WEAPONS USED AGAINST THE IRAQIS DURING THE GULF
WAR, SPECIFICALLY FOCUSING ON THE USE OF DEPLETED URANIUM IN MUNITIONS.**

IRAQI DIPLOMATS HAD A SUMMARY OF A REPORT ALLEGING A CONNECTION BETWEEN ALLIED USE OF WEAPONS CONTAINING DEPLETED URANIUM DURING THE GULF WAR AND A SUBSEQUENT INCREASE IN VARIOUS TYPES OF ILLNESS AND HAD BEEN INSTRUCTED TO ENSURE THAT THE INFORMATION RECEIVE THE WIDEST POSSIBLE DISTRIBUTION.

THE REPORT ALLEGED THAT SCIENTIFIC EVIDENCE COLLECTED FROM AREAS WHICH WERE BOMBARDED HAD PROVIDED SOLID EVIDENCE OF THE USE OF CHEMICAL AND BIOLOGICAL AGENTS, AND STRESSED THEIR POTENTIAL DANGER TO THE ENVIRONMENT. IT ADDRESSED THE USE OF DEPLETED URANIUM, CLAIMING THAT APPROXIMATELY 40 TONS OF THE MATERIAL HAD BEEN FOUND IN SOUTHERN IRAQ. IT CLAIMED THAT THIS MATERIAL CAME FROM æRADIATIONÆ WEAPONS USED AGAINST THE IRAQI MILITARY AND ON THE MAIN ROAD TO KUWAIT. THE REPORT ALSO ALLEGED THAT DEPLETED URANIUM FELL INTO THE CATEGORY OF BANNED WARFARE AGENTS, AND THAT ITS USE HAD LED TO BOTH SHORT-TERM AND LONG-TERM DAMAGE.

THE REPORT DETAILED WHAT IT CLAIMED WERE INCREASES IN CERTAIN DISEASES DUE TO ALLIED MILITARY ACTIONS, INCLUDING:

1. A TWO-FOLD INCREASE IN THE INCIDENCE OF EPIDEMIC VERTIGO, ALONG WITH MANY CASES OF AN UNDIAGNOSED DISEASE CHARACTERIZED BY BLINDNESS, FITS OF SEVERE HEADACHE, AND NUMBNESS. INITIAL REPORTS OF SUCH CASES WERE MADE ABOUT SIX MONTHS AFTER THE WAR;

2. AN INCREASE IN VARIOUS TYPES OF CANCER, SUCH AS LEUKEMIA, PARTICULARLY AMONG THE YOUNG. THE REPORT CLAIMED AN INCREASE IN DAILY REPORTS OF THESE CANCERS FROM TWO TO THREE IN 1991 TO 10 TO 15 A DAY AT THE PRESENT TIME; AND

**3. AN INCREASE IN THE INCIDENCE OF JUVENILE DIABETES, ATTRIBUTING THIS TO
THE PSYCHOLOGICAL EFFECTS OF EXPOSURE TO BOMBING, EXPLOSIONS,
SHELLING, MISSILE ATTACKS, AND AIR STRIKES BY SUPERSONIC FIGHTERS.**

http://www.gulflink.osd.mil/

Subject: MEDICAL PROBLEMS IN IRAQ

Filename:0me018.91

**MEDICAL PROBLEMS IN IRAQ
March 15, 1991**

KEY JUDGMENTS

**HEALTH PROBLEMS CURRENTLY FACING IRAQ ARE PRIMARILY PUBLIC HEALTH IN NATURE; ATTRIBUTABLE TO THE BREAKDOWN OF NORMAL PREVENTIVE MEDICINE, WASTE DISPOSAL, WATER PURIFICATION AND DISTRIBUTION, ELECTRICITY, AND TRANSPORTATION (IMPEDING HEALTHCARE
ACCESS). THERE ARE INDICATIONS THAT THE BAGHDAD GOVERNMENT IS FOCUSING ITS EFFORTS RESTORING THESE SERVICES, AS EXAMPLED BY A
RECENT REPORT OF AN ICRC DELIVERY TO BAGHDAD OF WATER PURIFICATION
AND SEWAGE EQUIPMENT.**

[(b)(1) sec 1.3(a)(4)]

DISEASE OCCURRENCE IN BAGHDAD

**(U) OPEN SOURCE NEWS RELEASES, CITING INTERNATIONAL AND IRAQI HEALTH OFFICIALS, INDICATE THAT COMMUNICABLE DISEASES IN BAGHDAD
ARE MORE WIDESPREAD THAN Usually OBSERVED DURING THIS TIME OF THE
YEAR AND ARE LINKED TO THE POOR SANITARY CONDITIONS (CONTAMINATED
WATER SUPPLIES AND IMPROPER SEWAGE DISPOSAL) RESULTING FROM THE**

WAR. ACCORDING TO A UNITED NATIONS CHILDREN'S FUND (UNICEF)/WORLD HEALTH ORGANIZATION REPORT, THE QUANTITY OF POTABLE WATER IS LESS THAN 5 PERCENT OF THE ORIGINAL SUPPLY, THERE ARE NO OPERATIONAL WATER AND SEWAGE TREATMENT PLANTS, AND THE REPORTED INCIDENCE OF DIARRHEA IS FOUR TIMES ABOVE NORMAL LEVELS. ADDITIONALLY, RESPIRATORY INFECTIONS ARE ON THE RISE. CHILDREN PARTICULARLY HAVE BEEN AFFECTED BY THESE DISEASES. INCREASED INCIDENCE OF TYPHOID AND CHOLERA HAS BEEN REPORTED BY IRAQI RED CRESCENT OFFICIALS, BUT THE SPREAD OF THESE DISEASES HAS NOT BEEN CONFIRMED BY OTHER SOURCES.

(U) THE PREVALENCE OF SOME DISEASES HAS INCREASED IN BAGHDAD, BUT MAJOR DISEASE OUTBREAKS (INCLUDING TYPHOID, CHOLERA, AND MENINGITIS) HAVE NOT OCCURRED. THERE ARE INDICATIONS THAT THE SITUATION IS IMPROVING AND THAT THE Population IS COPING WITH THE DEGRADED CONDITIONS. DAILY RADIO BROADCASTS HAVE PROVIDED PRECAUTIONARY MEASURES TO BE TAKEN BY CIVILIANS TO PREVENT DISEASES. HOWEVER, CONDITIONS IN BAGHDAD REMAIN FAVORABLE FOR COMMUNICABLE DISEASE OUTBREAKS; THE DELAYED RESTORATION OF PUBLIC HEALTH SERVICES AND APPROACHING WARMER TEMPERATURES WILL INCREASE THE LIKELIHOOD OF SIGNIFICANT DISEASE OUTBREAKS. ADDITIONALLY, CIVIL DISTURBANCES COULD FURTHER DELAY INFRASTRUCTURE REPAIRS.

NEWS RELEASED TO WESTERN AUDIENCES FROM BAGHDAD ON SANITARY CONDITIONS AND DISEASE INCIDENCE IS CONSIDERED BIASED. THE IRAQI GOVERNMENT HAS MANDATED THE DEPARTURE OF NEWS PERSONNEL AND RELIEF AGENCY OBSERVERS, MAKING EVALUATION OF ACTUAL HEALTH CONDITIONS (DISEASES, INCIDENCE LEVELS, AND GROUPS AFFECTED) UNCLEAR.

http://www.gulflink.osd.mil/

DISEASE INFORMATION

Filename:0504rept.91

From: [(b)(6)] ~ Date and time ~
15:18:37
=======================================--===================

Date: Jan 91 15:18:35 EST
From:
To:
Subject: DISEASE INFORMATION
Comments: Forwarding note of Jan 91 15:17:40-EST from

From: --
***** Forwarding note from AFMICOPS--FSTCVMl 01/22/91 15:17 *****
Date: Jan 91 15:17:40 EST
From:
To: arcentg2@sandman.[b.2.]
Subject: DISEASE INFORMATION

From:

1. Please Pass the attached information to:
ARCENT G2
ARCENT G5
ARCENT SURGEON
[(b)(6)]

2. As this is our first attempt over this circuit, please
respond upon receip

of this message.

SUBJECT: Effects of Bombing on Disease Occurrence in Baghdad

ANALYST: [(b)(6)]

DATE: JAN 91

SUMMARY: Food- and waterborne diseases have the greatest
potential for outbreaks in the civilian and military
population over the next 30 to 60 days.

Increased incidence of diseases will be attributable to degradation of normal preventive medicine, waste disposal, water purification/distribution, electricity, and decreased ability to control disease outbreaks. Any urban are

in Iraq that has received infrastructure damage will have similar problems.

The following diseases are prioritized in descending order of expected outbreak potential in Baghdad over the next 30 to 60 days. Prioritization is based on level of endemicity, seasonal distribution, and mode of transmission.

1. FOOD- AND WATER-BORNE DISEASES:

Disease Primary Agents/Comments

a. Acute Diarrheas Bacterial: E. coli, Shigella spp., and Salmonella spp.

Protozoal: Giardia lamblia (particularly children) and Entamoeba histolytica

Viral: Rotavirus (primarily children)

b. Typhoid/Paratyphoid Salmonella typhi, S. paratyphi

c. Cholera Difficult to assess. Poorly reported. Outbreaks possible.

NOTE: Hepatitis A (HAV) is highly endemic, and therefore causes a limited

threat to the indigenous population. -~

2. OTHER ENDEMIC DISEASES:

a. Influenza Strain A(H3N2) predominates over A(HlNl) and B.

b. Meningococcal Group A predominates, but W135 reporting has Meningitis increased. Associated with overcrowding.

c. Childhood Diseases Primarily measles, but also diphtheria and pertussis.

d. Trachoma Associated with poor personal hygiene.

e. Intestinal Helminths Primarily ascariasis, ancylostomiasis, enterobiasis, trichuriasis.

|SUBJECT: Effects of Bombing on Disease Occurrence in Baghdad

3. VECTORBORNE DISEASES: Generally, vectorborne diseases are more of a lon

term problem, with increased transmission occurring after 60 days. However, increased incidence can be expected, especially in a prolonged military campaign.

a. Louse-borne typhus Rickettsia prowazekii. Associated with poor hygiene and overcrowding, especially in winter months.

b. Leishmaniasis Primarily cutaneous form due to Leishmania tropica. Focal increase associated with debris accumulation.

c. Malaria Currently no indigenous transmission and considered a low risk. Potential vectors are present.

4. More detailed explanations on conditions affecting expected disease occurrence are available. Extrapolation of this analysis should only be done after further consultation with AFMIC analysts.

|SUBJECT: Iraq - Medical Civil Defense Preparations and BW Propoganda

[(b)(6)]
DATE: JAN 91
According to open source press releases in November and December, several Iraqi ministries delivered public health information announcements outlining precautions that civilians should be taking because of the Persian Gulf crisis

Early guidelines by the Ministry of Local Government called on citizens to avoid careless use of drinking water, such as using it for watering domestic gardens and washing cars and sidewalks". In late December, the Baghdad Domesti

Service stated that 'the enemy may resort to biological war means on human, animal, or plant targets; these germs include bacteria, viruses-, fungi, and parasites which cause malaria and dysentery". Also, the announcement provided guidelines in

the following subject areas for protecting personnel, facilities food/water supplies, and crops from these biological agents:
A. Health precautions (NFI) to reduce possibility of contamination.
B. Isolation of infected persons and contaminated areas to prevent spread of disease.
C. "Sterilization" (decontamination) of infected persons and contaminated equipment and areas.
D. Proper storage of food and water to avoid contamination.
E. Plans to protect crops.

Comment: These types of statements would increase public awareness and encourage the civilian population to take additional preventive measures against health problems (such as medical shortages and disease outbreaks) that would result from an infrastructure weakened by sanctions or military conflict
Early statements may represent a legitimate attempt by the Iraqi government to prepare the civilian population. However, as the United Nations deadline approached, the Iraqi government's tactics became more exploitative as indicated by the "biological war" announcement propagandizing a possible U.S. biological threat. (See AFMIC Weekly Wire 50-90 for additional information on similar disinformation statements.)

The government disinformation citing potential increases of endemic diseases that are not biological warfare candidates would allow the government to blame the United States for public health problems created by military conflict. Additionally, an even more subversive motive could have formed the rationale for the disinformation campaign. The statements would create a scenario that would allow the U.S. to be blamed for potential civilian biological warfare (BW) casualties resulting from Iraqi BW use or contamination by agents released as a result of damage inflicted by coalition forces on BW facilities. Military planners, particularly civil affairs and humanitarian assistance groups, and political officials should be aware of the potential for the Iraqi population to blame coalition forces for these problems.

http://www.gulflink.osd.mil/

Disease Outbreaks in Iraq

Filename:0pgv072.90p

SUBJECT: Disease Outbreaks in Iraq
TO:
DOI: 21 FEB 90
ANALYST: [(b)(6)]

KEY JUDGEMENTS

[(b)(2)] assessment is that major disease outbreaks currently have not occurred in Baghdad or Basrah. For severe outbreaks to develop, a protracted war or more extensive collateral damage would have to occur.

However, conditions are favorable for communicable disease outbreaks, particularly in major urban areas affected by coalition bombing. Data necessary for determining expected numbers and rates of cases are not available, and any estimate would be totally unreliable.

COMMENTS

Infectious disease prevalence in major Iraqi urban areas targeted by coalition bombing (Baghdad, Basrah) undoubtedly has increased since the beginning of Desert Storm. However, reporting has been limited, conflictive, and non-specific, making the actual levels are unclear; specific diseases, numbers of cases, and groups affected have not been reported. Current public health problems are attributable to the reduction of normal preventive medicine, waste disposal, water purification and distribution, electricity, and the decreased ability to control disease outbreaks.

Prior to Desert Storm, the Iraqi government broadcast several public civil defense preparation statements. The language used in some of the public health statements would allow the government to propagandize increases of endemic diseases on military conflict (and potentially on contamination by agents released as a result of damage inflicted by coalition forces on CBW facilities). Increased incidence of diseases in these cities is assessed to be due to increased occurrence of endemic diseases.

Recent Iraqi controlled news releases to Multi-National Force audiences about the poor sanitary conditions in Baghdad is

considered biased. Reportedly, the Iraqi government has denied ICRC staff into Iraq to evaluate current health problems (presumably the ICRC staff could refute the "deplorable" conditions). In contrast, broadcasts to "friendly" Arab countries have painted a "life as normal" situation in Baghdad.

SUBJECT: Disease Outbreaks in Iraq cont.
DOI: 21 FEB 9O

Generalizations can be made on the most likely diseases to occur in significantly elevated or outbreak proportions over the near-term.

MOST LIKELY DISEASES DURING THE NEXT 60-90 DAYS (DESCENDING ORDER)

- **Diarrheal diseases (particularly children)**
- **Acute respiratory illnesses (colds and influenza)**
- **Typhoid**
- **Hepatitis A (particularly children)**
- **Measles, diphtheria, and pertussis (particularly children)**
- **Meningitis, including meningococcal (particularly children)**
- **Cholera (possible, but less likely)**

MOST LIKELY DISEASES DURING THE FOLLOWING 90-180 DAYS

- **Diarrheal diseases (particularly children)**
- **Acute respiratory illnesses (colds)**
- **Typhoid**
- **Hepatitis A (particularly children)**
- **Conjunctivitis (Eye infections)**
- **Measles, diphtheria, and pertussis (particularly children)**
- **Cutaneous leishmaniasis**
- **Meningococcal meningitis (particularly children)**
- **Malaria**
- **Cholera (possible, but less likely)**

Note: Filth fly populations can be expected to increase to high levels in warmer months, but their contribution to disease transmission is limited. The more proper analogy to make is that

the circumstances that create favorable conditions for diarrheal diseases are the same that are favorable for massive fly populations. However, flies do not cause that much disease.

http://www.gulflink.osd.mil/

IIR 6 898 0446 91 / STATUS OF DISEASE AT REFUGEE

Filename:68980446.91z
PATHFINDER RECORD NUMBER: 15178
GENDATE: 950504
NNNN
TEXT:
ENVELOPE CDSN = LGX086 MCN = 91122/22766 TOR = 911221352
PTTCZYUW RUEKJCS5947 1221352---RUEALGX.
ZNY
RUHGRPG T COMUSNAVCENT
HEADER P 021352Z MAY 91
FM JOINT STAFF WASHINGTON DC
TO AIG 8781
INFO RUEALGX/SAFE
P 021357Z MAY 91
FM [(b)(2)]
TO RUEKJCS/DIA WASHDC PRIORITY
INFO RUEKJCS/DIA WASHDC//DAT-7// PRIORITY
RUFTWSA/CTFPROVIDE COMFORT PRIORITY
RUFGAID/USEUCOM AIDES VAIHINGEN GM PRIORITY
RUSNNOA/USCINCEUR VAIHINGEN GE//ECJ2-ISC// PRIORITY
RUFRMHA/CTF SIX ONE PRIORITY
RUFRSGG/CTF SIX TWO PRIORITY
RHDLOJA/CTF SIX SEVEN PRIORITY
RUEORDF/DIRAFMIC FT DETRICK MD//AFMIC-CR//
BT
[(b)(2)]

SERIAL: (U) IIR 6 898 0446 91.

/********* THIS IS A COMBINED MESSAGE ************/**
BODY PASS: (U) DIA PASS TO AIG 8781.

[(b)(2)

SUBJ: IIR 6 898 0446 91 / STATUS OF DISEASE AT REFUGEE CAMPS - PROVIDE COMFORT (U)

[(b)(2)]

DEPARTMENT OF DEFENSE

DOI: (U) 910501

REQS: (U) [b.2.]

[(b)(1) sec 1.3(a)(4)]

SUMMARY: CHOLERA AND MEASLES HAVE EMERGED AT REFUGEE CAMPS.
FURTHER INFECTIOUS DISEASES WILL SPREAD DUE TO INADEQUATE WATER
TREATMENT AND POOR SANITATION.

TEXT: 1. THE MAIN CAUSES OF INFECTIOUS DISEASES, PARTICULARLY DIARRHEA, DYSENTERY AND UPPER RESPIRATORY PROBLEMS, ARE POOR SANITATION AND UNCLEAN WATER. THESE DISEASES PRIMARILY AFFLICT THE OLD AND YOUNG CHILDREN. ALTHOUGH THE EXACT PERCENTAGE OF INFECTIOUS DISEASES IS UNKNOWN FOR EACH CAMP, [(b)(1) sec 1.3(a)(4)] THAT AT LEAST EIGHTY PERCENT OF THE POPULATION OF CUKURCA HAS DIARRHEA.

2. THE MOST FREQUENT CASE OF NON-INFECTIOUS DISEASE IN THE CAMPS INVOLVES TRAUMA - USUALLY SOMEONE STEPPING ON A LAND MINE. THESE TRAUMA INJURIES ARE ALSO THE MOST LIKELY CASES TO BE EVACUATED FROM THE CAMP TO A MAJOR MEDICAL FACILITY.

3. CHOLERA, HEPATITIS TYPE B, AND MEASLES HAVE BROKEN OUT AT THE CUKURCA CAMP. ([(b)(1) sec 1.3(a)(4)]

REPORTED NINE POSITIVE CHOLERA CASES OUT OF TWENTY-TWO SAMPLES SUBMITTED. AMERICAN SAMPLES FROM CUKURCA ON 910501 INDICATE POSSIBLE CHOLERA. THE NUMBER OF MEASLE CASES IS UNDETERMINED.

4. THERE HAVE BEEN NO REPORTED DIAGNOSIS OF TYPHOID AND ONLY ONE SUSPECTED CASE OF MENINGOCOCEAL MENINGITIS. MEDICAL ANALYSIS ON OTHER INFECTIOUS DISEASES IS STILL AWAITING COMPLETION OF DATA COLLECTION.

5. ZAHKO HAS SIMILAR MEDICAL PROBLEMS AS THE BORDER CAMPS. DURING A DISCUSSION WITH A MEDICAL TEAM ON 910430, [(b)(1) sec 1.3(a)(4)] WAS TOLD THAT MOST OF THE CASES THEY WERE SEEING WERE DIARRHEA AND UPPER RESPIRATORY INFECTIONS.

([(b)(1) sec 1.3(a)(4)] 1. THE WEATHER HAS BEEN A POSITIVE FACTOR IN KEEPING THE NUMBER OF CERTAIN KINDS OF INFECTIOUS DISEASES DOWN TO A RELATIVELY MANAGEABLE LEVEL. HOWEVER, THE CONTINUING LACK OF CLEAN WATER FOR THE CAMPS AND THE LACK OF APPROPRIATE SANITATION FACILITIES HAS MANY MEDICAL PERSONNEL WORRIED. THE APPEARANCE OF CHOLERA AND MEASLES WAS EXPECTED, UNFORTUNATELY THE SLOW INTRODUCTION OF MEDICAL SUPPLIES AND ABSENCE OF A COLD CHAIN FOR PROPER STORAGE OF MEDICAL SUPPLIES ONLY ADDED TO A POTENTIALLY SERIOUS MEDICAL PROBLEM AT THE LARGER CAMPS.

http://www.gulflink.osd.mil/

(U) IIR 6 050 0007 91/HEALTH CONDITIONS IN IRAQ (U)

File: 950719_60500007_91r.txt

Page: 91r

Total Pages: 1

(U) IIR 6 050 0007 91/HEALTH CONDITIONS IN IRAQ (U)

Filename:60500007.91r
PATHFINDER RECORD NUMBER: 12699
GENDATE: 950504
NNNN
TEXT:
ENVELOPE CDSN = LGX501 MCN = 91154/21957 TOR = 911541708

PTTCZYUW RUEKJCS1415 1541710- --RUEALGX.
ZNY
HEADER P 031710Z JUN 91
FM JOINT STAFF WASHINGTON DC
INFO RUEADWD/OCSA WASHINGTON DC
RUCQVAB/USCINCSOC INTEL OPS CEN MACDILL AFB FL
RUCJACC/USCINCCENT MACDILL AFB FL//CARA//
RHEPAAB/TAC IDHS LANGLEY AFB VA//IDHS//
RUFTAKA/USAINTELCTRE HEIDELBERG GE
RUFTAKC/UDITDUSAREUR HEIDELBERG GE
RUDOGHA/USNMR SHAPE BE//SURVEY//
RUEALGX/SAFE
P 031700Z JUN 91
FM JICEUR VAIHINGEN GE//DO//
TO RUFTWSA/CTF PROVIDE COMFORT INCIRLIK AB TU//J2//
RUEKJCS/DIA WASHINGTON DC//DAT-6/DAT-7//
RHFQAAA/HQ USAFE RAMSTEIN AB GE//IN/INO//
RUFDAAA/HQ USAREUR HEIDELBERG GE//AEBG//
INFO RUFGAID/ USEUCOM AIDES VAIHINGEN GE
RUEKJCS/JOINT STAFF WASHINGTON DC
RUEKJCS/OCSA WASHINGTON DC
RUENAAA/CNO WASHINGTON DC
RUEAHQA/CSAF WASHINGTON DC
RUEACMC/CMC WASHINGTON DC
RUEBJFA/MPC FT GEORGE MEADE MD
RUEABOL/HQ AFOSI BOLLING AFB DC
[(b)(2)]
RUEHC/SECSTATE WASHINGTON DC
RUWSMXI/MAC INTEL CEN SCOTT AFB IL//IN//
RUFDAAA/USA INTEL CENTER HEIDELBERG GE
RUFTAKC/UDITDUSAREUR HEIDELBERG GE
RUDOGHA/USNMR SHAPE BE//SURVEY//
RUEALGX/SAFE
RUEADDS/DITDS
RUFHMD/USDAO MADRID SP
RHFUMHE/BRFINK MHE BOERFINK GE
RHDLCNE/CINCUSNAVEUR LONDON UK//N-2//
RUCBSAA/FICEURLANT NORFOLK VA
RUCBSAA/USCINCLANT NORFOLK VA
RUCBSAA/CINCLANTFLT NORFOLK VA
RUSNNOA/USCINCEUR VAIHINGEN GE//ECJ2-OC//
RHFQAAA/USAFE COIC RAMSTEIN GE//INRMH//
RUFLFSA/16AF TORREJON SP//IN//
RUFLFSA/AFOSI DIST 68 TORREJON AB SP//CC//
RUFDAAA/CINCUSAREUR HEIDELBERG GE//AEAGB-C-RE//
RUFTAKA/USAINTELCTRE HEIDELBERG GE//AEAGB-PD-CUR//
RUFHNA/USMISSION USNATO
RUEOFAA/CMDRJSOC FT BRAGG NC//J-2//

ZEN/FSTC INTEL OPS CHARL//AIFICB//
RUDOECA/DET 3 FTD LINDSEY AS GE//CC//
RUDOECA/USCINCEUR LINDSEY AS GE//ECJ1-SADEM//
RUEHNC/USDAO NICOSIA CY
RUFHRA/USDAO RABAT MO
RUEHTU/USDAO TUNIS TS
RUDMNIC/COMNAVINTCOM WASHINGTON DC//NIC-03//
RUEORDA/CDR AFMIC FT DETRICK MD
BT
CONTROLS
SECTION 001 OF 002
BODY MSGID/SYS.RRM/JICEUR//
RMKS/SERIAL: (U) 6 050 0007 91
COUNTRY: (U) IRAQ (IZ)
SUBJECT: (U) IIR 6 050 0007 91/HEALTH CONDITIONS IN IRAQ (U)
WARNING: (U) THIS IS AN INFORMATION REPORT, NOT FINALLY EVALUATED INTELLIGENCE.

DEPARTMENT OF DEFENSE
--

DOI: (U) 910508
REQS: (U) [(b)(2)]
SOURCE: (U) [(b)(1) sec 1.3(a)(4)]

SUMMARY: SOURCE WAS [(b)(1) sec 1.3(a)(4)]
TO ASSESS CONDITIONS THERE. SOURCE [(b)(1) sec 1.3(a)(4)]TRAVELED TO
[(b)(1) sec 1.3(a)(4)]
TO ASSESS HEALTH CONDITIONS AND DETERMINE THE MOST CRITICAL MEDICAL
NEEDS OF IRAQ. SOURCE OBSERVED THAT IRAQI MEDICAL SYSTEM WAS IN
CONSIDERABLE DISARRAY, MEDICAL FACILITIES HAD BEEN EXTENSIVELY
LOOTED AND ALMOST ALL MEDICINES WERE IN CRITICALLY SHORT SUPPLY.
IN THE OPINION OF THE SOURCE, ENTERIC DISEASES, SPECIFICALLY
GASTROENTERITIS, POSE THE MOST SIGNIFICANT THREAT COUNTRY-WIDE,
ESPECIALLY AS THE WEATHER GROWS WARMER.
TEXT: 1. [(b)(1) sec 1.3(a)(4)], SOURCE WAS
[(b)(1) sec 1.3(a)(4)] TO ASSESS HEALTH CONDITIONS IN IRAQ.

[(b)(1) sec 1.3(a)(4)]

2. [(b)(1) sec 1.3(a)(4)]

3.

[(b)(1) sec 1.3(a)(4)]. SOURCE ALSO STATED THAT ACCORDING TO

[(b)(1) sec 1.3(a)(4)]

**MORTALITY DATA COLLECTED BETWEEN 1990 AND 1991 SHOWED THAT CHOLERA
AND TYPHOID HAVE ALWAYS BEEN ENDEMIC TO IRAQ AND THERE HAD BEEN
REPORTS OF CASES IN BAGHDAD AND BASRAH. FOR THE FIRST TIME, HOWEVER, KVASHIORKOR HAD BEEN OBSERVED IN IRAQ, ALONG WITH EVIDENCE OF PROTEIN DEFICIENCY. [(b)(1) sec 1.3(a)(4)] FELT
THAT TYPHOID WAS A PROBLEM, BUT GASTROENTERITIS WAS KILLING CHILDREN. THEY STATED THAT IN THE SOUTH, 80 PERCENT OF THE DEATHS
WERE CHILDREN (WITH THE EXCEPTION OF AL AMARAH, WHERE 60 PERCENT
OF DEATHS WERE
CHILDREN). THEY ALSO NOTED THAT IN THE REFUGEE CAMPS IN THE SOUTH, 50 PERCENT OF THE POPULATION WERE CHILDREN AND 30% WERE
WOMEN. THEIR PRIMARY CONCERN, HOWEVER, WAS THAT THE COMING WARM
WEATHER AND POTENTIAL BACTERIAL GROWTH IN THE WATER WOULD ACCELERATE THE SPREAD OF DISEASE.**

4. [(b)(1) sec 1.3(a)(4)]

5.[(b)(1) sec 1.3(a)(4)]

6. [(b)(1) sec 1.3(a)(4)]

7. [(b)(1) sec 1.3(a)(4)]

8. [(b)(1) sec 1.3(a)(4)]

9. [(b)(1) sec 1.3(a)(4)]

10. [(b)(1) sec 1.3(a)(4)]

/IPSP: (U) PG2520; PT 1810./
/COMSOBJ: (U) [b.2.]
ADMIN PROJ: (U)
INSTR: (U) [b.2.]
PREP: (U) [(b)(6)]
ACQ: (U) [(b)(2)
DISSEM: (U) [b.2.]
WARNING: (U)
[(b)(2)]
BT

#1428

INFODATE: 0

http://www.gulflink.osd.mil/