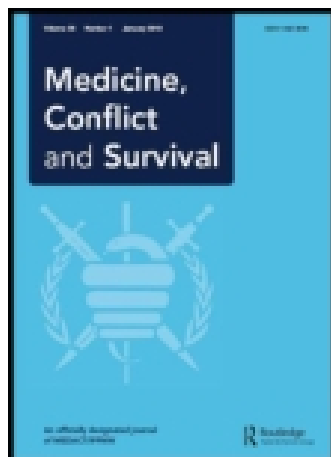


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Publisher: Routledge

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UK



Medicine, Conflict and Survival

Publication details, including instructions for authors
and subscription information:

<http://www.tandfonline.com/loi/fmcs20>

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Published online: 24 Jan 2007.

To cite this article: Graeme MacQueen, Thomas Nagy, Joanna Santa Barbara & Claudia Raichle (2004) 'Iraq Water Treatment Vulnerabilities': a Challenge to Public Health Ethics, *Medicine, Conflict and Survival*, 20:2, 109-119, DOI: [10.1080/1362369042000234708](https://doi.org/10.1080/1362369042000234708)

To link to this article: <http://dx.doi.org/10.1080/1362369042000234708>

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'Iraq Water Treatment Vulnerabilities': a Challenge to Public Health Ethics

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A formerly classified US document, 'Iraq Water Treatment Vulnerabilities,' provides evidence that ill health was knowingly induced in the population of Iraq through the ruination of that country's water purification system. We believe that the uncovering of this document should stimulate the public health community to clarify principles of public health ethics and to formulate statements giving voice to these principles. We propose here two statements, one dealing with the broad issue of public health ethics and international relations, and one dealing specifically with public health ethics and water purification.

KEYWORDS Ethics Iraq Public health Sanctions United States
Water-borne disease Water supply

Introduction

'Health promotion goes beyond health care. It puts health on the agenda of policy makers in all sectors and at all levels, directing them to be aware of the health consequences of their decisions and to accept their responsibilities for health' (Ottawa Charter for Health Promotion, from the first International Conference on Health Promotion, Ottawa, 17–21 November 1986).¹

A recent study concludes that water, sanitation and hygiene account for 5.7 per cent of the total disease burden world-wide, measured in disability-adjusted life years. The authors of the study hold that this is an avoidable disease burden and should be a priority for public health policy.² It is important that health professionals understand just how avoidable this burden has been in the case of Iraq: it was knowingly inflicted on the population by outside actors.

The growth of the field of public health in the West was associated, especially in the late nineteenth century, with the growing scientific understanding of disease and consequent improvements in water supply

and sanitation. The lowering of morbidity and mortality rates was aided by this scientific understanding.³ The government of the United States, possessed of this scientific knowledge and having access, since January 1991, to a study clearly linking the forced decline of Iraq's water purification system to increased ill health and death from water-borne disease in the population, nonetheless proceeded to further carry out, and to maintain for over a decade, the ruination of this water purification system. While this violates the Laws of War as embodied in the Geneva Conventions (see Appendix 1) our focus is on the violation of state obligations to observe fundamental public health ethics in refraining from actions that will foreseeably harm the health of a population.

Water and Iraq

The attempt to gain control over water was closely connected to the emergence of cities in the ancient world. Hydro-technology, addressing chiefly the problems of irrigation and potable water supply, was crucial to successful urbanization. Mesopotamia, located mainly in the region now known as Iraq, was a key contributor to early hydro-technology. The region's irrigation techniques were among the most impressive in antiquity, while its advances in the provision of large quantities of drinkable water were equally remarkable (refs 4, 5: pp. 5ff, 70ff, 78ff). Over the centuries, Mesopotamia experienced extreme political vicissitudes, and the quality of its water technology fluctuated accordingly. War, political disintegration and environmental challenges brought major setbacks (ref 5: pp.6, 16ff, ref 6).

In the second half of the twentieth century the government of Iraq, despite its militaristic and repressive nature, created modern public services and health care facilities, as well as a reasonably efficient water purification system for the country (refs 7, 8: p.4). Despite Iraq's extremely costly eight-year war with Iran, the country's infant mortality rate dropped steadily during the years prior to 1990 (ref.9: p.152).

On 2 August 1990 the military forces of Iraq invaded Kuwait, violating both common standards of morality and international law. In response the United Nations Security Council passed Resolution 661 on 6 August 1990, which officially initiated international sanctions against Iraq. Coalition forces began a military assault on Iraq on 16 January 1991, and between this date and 27 February 1991, Iraq was subjected to one of the most intensive and sustained bombings in history.¹⁰ Although appendix 1 of the 1977 Geneva Protocol I Additional to the Geneva Conventions of 12 August 1949 explicitly prohibits the ruination of 'objects indispensable to the survival of the civilian population' such as 'drinking water installations and supplies' in order to destroy the 'sustenance value' of these objects to the civilian population, United States forces targeted water treatment facilities, reservoirs, and water distribution systems as well as the electrical power plants crucial to the water treatment system (refs. 11, 12, 13: p.36, 14).

Following the war and Iraqi withdrawal from Kuwait, the sanctions regime was maintained, and severe restrictions were imposed on Iraq's access to water purification chemicals and technology. Subsequently, these materials were permitted entry only intermittently, with the result that Iraq recovered only a small portion of its pre-sanctions water service (refs. 9: p.160, refs. 15, 16). It has been estimated that whereas 90 per cent of the population had access to safe drinking water before the sanctions were imposed in 1990, by 1999 the figure stood at 41 per cent (ref. 8: pp.4, 10).

Child mortality in Iraq was surveyed by the International Study Team in 1991, by the Food and Agriculture Organization in 1995, and by UNICEF in 1999.¹⁷⁻¹⁹ While scholars differ over methodology and interpretation of these surveys,²⁰ few would quibble with the assertion that hundreds of thousands of excess deaths in the under-five population occurred. The 1999 UNICEF survey showed an increase in under-five mortality from 56 to 131 per thousand over the decade, except in the autonomous provinces, where rates improved in recent years. Changes in life quality and expectancy of the rest of the population have been described but not measured. While multiple factors combined to cause these excess deaths, scholars do not doubt that the economic sanctions were a major factor. The role of water-borne disease, exacerbated by these sanctions, has been repeatedly highlighted (ref 8: p.4, refs. 11, 18, ref. 21: p.13). The 1995 FAO survey in Baghdad showed a three-fold increase in deaths of under-fives from diarrhoeal diseases.

What is it like for a child to die from a combination of malnutrition and water-borne diarrhoeal disease? Typically, the small, underweight child is too weak to take oral fluids as dehydration progresses. She or he is feverish and suffering pain from bowel spasms. As renal function collapses, there may be back pain. Protein leakage from lung vessels causes increasing shortness of breath. The child may be conscious and show recognition of caretakers through most of the dying process or may be comatose before death (Nicola Kaatsch, personal communication, 23 Aug 2002). This process became increasingly common in Iraq, as a lived reality for individuals, families and communities. It is a proper subject of public health ethics.

The Challenge to Public Health Ethics

Those studying Iraq's post-1991 history have often commented that outside actors have combined to force the country into a pre-modern or pre-industrial stage of economic development (ref. 13: p.1, ref. 22). Since such 'de-development' (UNICEF's term for what has been done to Iraq, ref 21: p.27) entails the forced reversion of a nation's public health system to that of an 'underdeveloped' society – with the expected rise in mortality and morbidity, especially for small children – the topic is one that should engage the attention of all those concerned about public health. We laud those health professionals and others who have brought these matters to public attention and subjected them to ethical analysis (for example, the Ethics and

Human Rights Committee of the American College of Physicians).²³ We believe that a document hitherto ignored in medical literature allows us to sharpen the ethical argument opposing the destruction of Iraq's economy and its water treatment system.

Before turning to this document, it is important to ask whether there are principles of public health ethics that can offer us moral guidance. Most attempts to articulate such principles have been limited by frameworks built to accommodate policy internal to a state rather than interaction between states. In order to make use of such principles for inter-state relations, however, one need only postulate that the populations of all states have the same fundamental rights to public health, and that governments have moral duties not only to the populations of their own states but also to those of other states.

The Code of Ethics for Public Health recently adopted by the American Public Health Association includes among its 12 principles the following two:

1. Public health should address principally the fundamental causes of disease and requirements of health, aiming to prevent adverse health outcomes.
4. Public health should advocate for, or work for the empowerment of, disenfranchised community members, ensuring that the basic resources and conditions necessary for health are accessible to all people in the community.²⁴

In proposing to extend these principles to inter-state relations, we are not arguing that the responsibility of an external government is the same as the responsibility of the government internal to a state. We are not suggesting, for example, that the government of the United States had, prior to the 2003 war, the same sort of direct responsibility to take care of the population of Iraq as had the government of Iraq. But we think it is a reasonable extension of the above principles to assert that no government should act in ways which it knows or should know will prevent the government of a second state from addressing 'the fundamental causes of disease and requirements of health' of the population of that second state or from 'ensuring that the basic resources and conditions necessary for health' are made available to the entire population of that second state.

In other words, to return to the case at hand, neither the government of the United States nor any other government should knowingly prevent the government of Iraq from acting according to these principles. We believe this extension of public health principles is valid even if the government of the second state (Iraq in this case) is deficient in its own adherence to principles of public health.

The words 'knowingly', 'knows', and 'should know' are important to our discussion. It is a general principle of Western legal systems that the

culpability of an agent increases as the awareness of the agent increases. (To kill someone knowingly, for example, and especially with forethought, is a greater crime than to kill someone accidentally or unknowingly.) We believe it is reasonable for public health ethics to accept this principle.

The Document: '*Iraq Water Treatment Vulnerabilities*'

Even if '*Iraq Water Treatment Vulnerabilities*'²⁵ had not come to light it would be extremely difficult to argue that increased mortality from water-borne disease was an unknown or unforeseen effect of bombing and sanctions.²⁶ The discovery of this and related documents, however, seems to us to make such an argument impossibly weak.

During the controversy in the United States over the exposure of US military personnel to chemicals during the 1991 Gulf War, President Bill Clinton required the Department of Defense and the Central Intelligence Agency in 1995 to declassify a huge mass of documents bearing on Gulf War Syndrome. '*Iraq Water Treatment Vulnerabilities*' was one of about 40,000 documents dumped onto the Internet at that time. It was made public in 1998 when Felicity Arbuthnot interviewed one of the authors of the present article (TN) for the *Sunday Herald* of Scotland.²⁷ He came across the document during research on a related issue, and was astonished to learn that:

- this study of Iraq's water treatment system, issuing from the Defense Intelligence Agency, US Department of Defense in January 1991 and apparently copied to Royal Air Force Strike Command in the United Kingdom, reveals a detailed knowledge of Iraq's water treatment methods.
- The study concludes that Iraq's water treatment system is vulnerable to sanctions and is, already in January 1991, showing signs of deterioration; and it further concludes that 'it probably will take at least six months (to June 1991) before the system is fully degraded.'
- It notes, in a discussion of chemicals crucial to Iraq's water purification system, that 'aluminum sulphate supply levels are known to be critically low' and that 'recent reports indicate the chlorine supply is critically low. Its importation has been embargoed...'
- The study predicts increased incidence of disease, and notes the possibility of epidemics ('epidemics of such diseases as cholera, hepatitis, and typhoid could occur'), if sanctions targeting the water treatment system remain in place.
- Although the study does not itself make any recommendations (at least in the redaction made available to the public – the document is still partially classified), it by no means laments the weakening of the Iraqi water purification system: on the contrary, it apparently assumes that creating pressure on Iraq in this way is acceptable strategy.

Although Nagy attempted to gain serious public attention for this document, his efforts met with little success, and it was not until August 2002 that a major US news agency (Gannett) showed interest in the material. Since that time the document, and other related documents uncovered at the same time, has received some coverage, but public discussion has remained limited.^{28,29} We believe that those concerned with public health have a special role to play in this discussion.

The water study document is relevant to public health ethics because it provides evidence that the forcible lowering of the standards of health of Iraqi citizens through the ruination of their water treatment system was carried out knowingly. The health effects of the destruction of the water treatment system were not merely foreseeable in principle but were actually foreseen.

The 'Iraq Water Treatment Vulnerabilities' document strengthens the accusation, already amply supported, that the United States government (and, to a greater or lesser extent, other governments colluding with these policies) knowingly:

- impeded the attempts of the Iraqi government to address 'the fundamental causes of disease and requirements of health' of its population,
- impeded the Iraqi government's attempts to prevent 'adverse health outcomes',
- disempowered both the government and the general population of Iraq in such a way as to prevent them from ensuring 'that the basic resources and conditions necessary for health' were accessible to the society as a whole.

In discussions beginning in 1999 with the Joint Services Conference on Professional Ethics, with ethicists, members of the US armed forces, and others, we have listened to a number of arguments against our accusations. These include the following: the authors of *'Iraq Water Treatment Vulnerabilities'* are anonymous and we do not know their original intentions; what matters ethically is not the existence of a document predicting a possible scenario but, rather, the actual, historical events that have occurred since the creation of the document; the responsibility for the health of the Iraqi people lies with the government of Iraq, which could have chosen since 1991, and especially since the institution of the Oil for Food Program in 1996, to repair the country's water treatment facilities; and, finally, the water treatment materials whose entry has been hampered are 'dual use' materials that could be used for military purposes. Our brief answers to these arguments are as follows.

First, although we are certainly interested in the identity of the authors of *'Iraq Water Treatment Vulnerabilities'* (we are particularly concerned that

the authors may have included health professionals), neither their identity nor their intentions is crucial to our argument. We are primarily interested in the government (or governments) that received the study. We hold that this government (or governments) had a moral responsibility to take the document into account in its subsequent actions.

Second, we disagree that only events that occurred after the receiving of the document are ethically relevant. Both the document – its contents and the act of receiving it – and subsequent actions are morally relevant. Only by examining them together can we make an informed decision about the ethical quality of the actions of the governments enforcing the sanctions. The discovery of the document tells us that the effects of sanctions on water-borne disease and the health of the Iraqi population were well known from a very early date. This makes it more sinister that the US government, through its dominant role in the nature, maintenance and policing of the economic sanctions against Iraq, played a key role in impeding the repair of Iraq's water treatment system.

Tony Hall, Democratic Representative from Ohio, who visited Iraq in the summer of 2000 as the first member of the US Congress to visit Iraq since 1991, wrote on his return:

The prime killer of children under five years of age – diarrhoeal 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 US 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.³⁰

Third, we do not believe it is true that the government of Iraq could have repaired its water treatment system. The dependence of the Iraqi water treatment system (carefully noted in *'Iraq Water Treatment Vulnerabilities'*) on materials from outside the country, the importation of which has been repeatedly interfered with since 1990, has greatly limited the capacity of the government of Iraq to rehabilitate the system (ref 8: pp.4, 10, ref 9: p.160, refs 21, 31).

Fourth, the claim that materials denied entry to Iraq are 'dual use' appears to us neither factually credible nor morally adequate as an excuse for the weakening of the country's water treatment system. The factual dispute goes beyond the limits of this paper. As for the moral issue, it is our view that those concerned about public health and public health ethics must reject *unconditionally* the knowing destruction of a population's water treatment system - that is, public health ethics must reject such destruction regardless

of the purposes for which this destruction is carried out or the military justifications offered.

Statements on Public Health Ethics

We believe that the actions of the US government, supported by the government of the United Kingdom and, to various degrees, by other governments, and legitimized by the UN Security Council, violate the basic values of public health. We offer in conclusion, two statements, one enunciating a general principle and one addressing water treatment specifically, and hope they will lead to fruitful discussion.

Public Health Ethics and International Relations

Inasmuch as public health should address principally the fundamental causes of disease and requirements of health, aiming to prevent adverse health outcomes, and inasmuch as this duty is owed equally to all peoples, it is morally unconscionable for a government to act in ways which it knows or should know will obstruct the fulfillment of these obligations by a second government.

Public Health Ethics and Water Purification

Consistent with Article 54 of the 1977 *Geneva Protocol I Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts*,³² health professionals shall not countenance, condone, or participate in acts which they know or should know will imperil the health of a population, or part of a population, through the destruction, damaging, or rendering useless, for any purpose whatsoever, of a population's water purification system; moreover, health professionals have a positive duty to make public any credible information regarding such knowing imperilment of the health of a population.

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Appendix 1

The following is an extract from the 1977 Geneva Protocol I Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of International Armed Conflicts.³² The protocol has been signed by 150 states, including the US, which has not, however, ratified it.

Article 54 - Protection of objects indispensable to the survival of the civilian population:

1. Starvation of civilians as a method of warfare is prohibited.
2. It is prohibited to attack, destroy, remove or render useless objects indispensable to the survival of the civilian population, such as foodstuffs, agricultural areas for the production of 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.

Appendix 2

The document discussed above, '*Iraq Water Treatment [sic] Vulnerabilities*',²⁵ is a partially declassified document available on the Internet, at the time of writing of this article, at the Gulfink site of the US Department of Defense. The document itself is dated 22 January 1991; its analysis is dated 18 January 1991 and is approximately 2600 words in length. It is marked as issuing from the Defense Intelligence Agency, US Department of Defense, as sent to Central Command, and as copied for information (we here interpret the acronyms used in the original) to: Central Command, US Air Force; Royal Air Force Strike Command; US Marine Corps Central Command; US Army 18th Airborne Corps - Dragon Corps; US Army VII Corps - Jayhawk Corps; and 'Ankara,' which we assume refers to the US command in Ankara.

The document states that the water purification system in Iraq depends on imported equipment and chemicals. It says that failure to maintain these imports will result in a shortage of drinking water for much of the population, and it denies that Iraq has alternative, unsanctioned sources of supply. It indicates that degradation of the water purification will probably lead to a heightened prevalence of several diseases, which it names; and it lists the following as water-dependent industries whose functioning will simultaneously be impaired:

petrochemical, fertilizer, petroleum-refining, electronic, pharmaceutical, and food processing.

(Accepted 3 November 2003)

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