Interactive comment on "Water Expert: a conceptualized framework for development of a rule-based decision support system for distribution system decontamination" *by* J. L. Gutenson et al.

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Comment 1 1) Expert system has been described as a form of AI but it will be interesting to explain more about the reason. More description of specific cases of expert system (how they have worked in the past, how they work and what successful cases will be ideal instead of just providing references). 2) No response. 3) The manuscript will examine, in greater detail, previous DSS applications.

Comment 2 1) Explains more about what has been done in expert system models 2) No

response. 3) The manuscript will examine, in greater detail, previous DSS applications.

Comment 3 1) Explain what is Kypipe for a non-North American audience. 2) This is mentioned in Section 2, lines 11-13. 3) No manuscript alternations are anticipated.

Comment 4 1) how different is CANARI (The USEPA model from this one)? The author has not mentioned anything about this tool which will be an important review to do. 2) CANARY is a Contamination Warning System (CWS) developed by the United States Environmental Protection Agency (USEPA) Threat and Vulnerability Assessment Program (TEVA). While related, this tools seeks to determine whether or not a contamination event is occurring, while Water Expert is designed to optimize response and recovery following a contamination event. 3) The manuscript does reference USEPA TEVA tools in lines 3-9 of Section 2, including CANARY. Because the functionality of CANARY does not overlap but rather compliments Water Expert, further mention of CANARY will not be examined in the manuscript.

Comment 5 1) How Water Expert was designed to consider contaminant characteristics, distribution system characteristics, volume of affected water, extent of the contamination, and resources available for response? More importantly, Water Expert can provide the alternatives to work in case of a contaminant event but what if the water utility does not have enough capable workforce to do it? To what extent Water Expert consider this type of restrictions? In terms of format. Fixing the following comments will make the read of this document more smooth. Some sentences look too long which makes the read proofing tedious. For example sentence 10. 2) Authors mention a lot of names with abbreviations, but again for a non North-American audience is not adequate. 3) Author mention many references but does not describe some of the most important uses in Water System. For example, what specifically is Drupal 6? 2) Water Expert considers contaminant characteristics based on human and environmental health impacts outlined by the USEPA and the U.S. Center for Disease Control Agency for Toxic Substances & Disease Registry (ATSDR). Water Expert considers distribution system characteristics only through contaminant-pipe material interaction.

Water Expert does not explicitly consider volume of affected water or extent of the contamination, these are summarized within a report once the full recommendations are generated. A list of treatment alternatives is provided that coincide with Table 1 of the manuscript, which implicitly account for resource considerations and restrictions. Drupal 6 is a content management system (CMS) as describe in Section 2, lines 20-23. 3) How Water Expert considers contaminant characteristics is outlined in Section 4, lines 5-8 of the manuscript. How Water Expert considers distribution system characteristics is briefly outlined in Section 4, a more substantial description will be provided in the manuscript. The manuscript will be altered to better describe how Water Expert considers volume of affected water, extent of contamination, and resource allocation. The authors will work to reduce long sentences and clarify items in the manuscript.

Interactive comment on Drink. Water Eng. Sci. Discuss., 7, 169, 2014.

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