

## ***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.***

### **Anonymous Referee #1**

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**General comments** The manuscript provides just a fair contribution to scientific progress and is in this respect of fair quality. Although the idea to have a decision support system (DSS) back-end utilizing and supporting both rule based expert knowledge and modeling software is good, no results are reported regarding increased insight in decision making, no hypothesis is tested and/or no new algorithms have been tested or implemented and compared with existing, problem solving methods. The lack of a structured, scientific approach to deal with such questions, linking to the conceptualized framework, illustrating results with the use case with and without using the

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framework and drawing conclusions is a missed opportunity. The presentation of the Water Expert framework concept is however clear.

### **Specific comments**

1. *Does the paper address relevant scientific questions within the scope of DWES?* No, the manuscript does not address or discuss any relevant scientific questions. For example, how to cope with the (un)certainty of an expert opinion? How does working with the Water Expert framework compare to working with separate tools? Decision making for decontamination also involves the mitigation of risks. So, another (unaddressed) research question is how to identify and mitigate these risks in an optimal way?
2. *Does the paper present novel concepts, ideas, tools, or data?* The idea to unravel the decision making process, to identify the relevant (decision) processes for stakeholders and connect modeling tools with expert rules is not novel in several engineering disciplines. However, such a system is by the referee's knowledge not yet developed for decontamination issues in drinking water applications.
3. *Are substantial conclusions reached?* The conclusions read as a summary of the concept, infrastructure and tools behind the Water Expert framework, complemented with a scope for further development and use of the framework. Although a promising concept, it is not substantial in the scientific sense.

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4. *Are the scientific methods and assumptions valid and clearly outlined?* There are hardly any scientific methods and assumptions made.
5. *Are the results sufficient to support the interpretations and conclusions?* The description of setting up the framework is concise and well written. Lack of substantial scientific questions amount to methods
6. *Is the description of experiments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)?*
7. *Do the authors give proper credit to related work and clearly indicate their own new/original contribution?* Yes, so it seems.
8. *Does the title clearly reflect the contents of the paper?* Yes.
9. *Does the abstract provide a concise and complete summary?* Yes.
10. *Is the overall presentation well structured and clear?* Yes.
11. *Is the language fluent and precise?* Yes.
12. *Are mathematical formulae, symbols, abbreviations, and units correctly defined and used?* Yes, abbreviations are correctly defined.
13. *Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated?* To increase the scientific impact of the manuscript, it might be worthwhile to consider scientific questions, to
14. *Are the number and quality of references appropriate?* The amount of references to used tools, programming and database languages, protocols and other papers is appropriate. The manuscript would however benefit from a (short) literature overview and comparison to existing DSS systems mentioning their advantages and disadvantages in the introduction. Although the introduction does mention a

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couple of DSS applications (mostly applications developed in the USA, are there no European or Asian counterparts?), it does not compare their methods to the methodology used here.

15. *Is the amount and quality of supplementary material appropriate?* No supplementary material is included.

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