

## A Grave Mistake Scenario

We are citizens of the small, eastern United States town displayed on the map. Our town has a population of about 1,000 residents, but the local cemetery shows the town has a long history with several Civil War veterans buried on the grounds and dates for early settlers as far back as the 1810's. The town doctor has reported to the town council over the past couple of years that a few members of the community have described to puzzling physical symptoms. Recently, a patient presented similar but more serious complaints: weakness, tingling and numbness in his hands and feet, and dark warts on the palms of his hands and the soles of his feet. The doctor followed up with questions related to the patient's medical history and uncovered the following information:

He works in the small, local factory (Private Well #6, on the *Community Map*) that produces wood preservatives. He has lived in the area for about ten years. He and his wife of ten months have a private well at their home. His wife has not exhibited similar symptoms. He quit smoking three years ago and does not drink alcoholic beverages. He takes no medications, only vitamins. The doctor suspects the symptoms documented over the last few years are related to chronic arsenic poisoning from contaminated drinking water. The doctor also advises the town council that the EPA accepted level of arsenic in drinking water is 10 parts per billion (ppb). The town council votes to budget money for ground water testing that will initially be limited to wells already in existence.

### Questions upon identification of suspected arsenic source:

- What should your town do with this information?
- What options should the factory be given?
- This factory is a major employer of people in your community. Will this situation affect your discussions with factory **owners**?

After groups share their answers with the rest of the class, announce to the class that an independent review of the factory has proven the ***operation is not responsible for the arsenic contamination***. All arsenic coming in to and leaving the factory has been accounted for. Ask students what should be done. Students may conclude that they had insufficient data.

Since the factory has accounted for all of its arsenic, other sites need to be tested. Tell students that each group represents a water quality testing agency. Each group has funding to drill (4) new monitoring wells at any location on the map. Each team will designate one team member as the lead investigator, who will bring coordinate requests to you to discover the arsenic concentrations found at the chosen location. Teams can send their representatives to request data on one coordinate at a time or all four locations chosen, but should keep in mind this is a race against time.

The goal is to see which group can locate the source of the arsenic first. The goal is to see which group can locate the source of the arsenic first.

## Grave Mistake: Complete Data Set 2

	A	B	C	D	E	F	G	H	I	J	
1	0	0	0	0	0	0	0	0	0	0	1
2	0	0	0	0	0	0	0	7	78	3	2
3	0	0	1	2	7	11	14	70	73	6	3
4	1	6	9	14	32	48	65	67	70	11	4
5	3	9	16	23	37	50	64	65	60	15	5
6	9	15	21	35	42	53	61	56	48	14	6
7	12	16	24	31	40	47	52	44	41	12	7
8	15	18	23	29	38	39	42	36	33	10	8
9	11	15	21	25	27	30	34	30	21	9	9
10	7	13	17	22.5	20	22	20	21	18	4	10
11	3	6	10	12	15	14	11	10	9	0	11
12	0	0	4	5	0	9	5	3	2	0	12
13	0	0	1	0	0	3	0	0	0	0	13
14	0	0	0	0	0	0	0	0	0	0	14
	A	B	C	D	E	F	G	H	I	J	