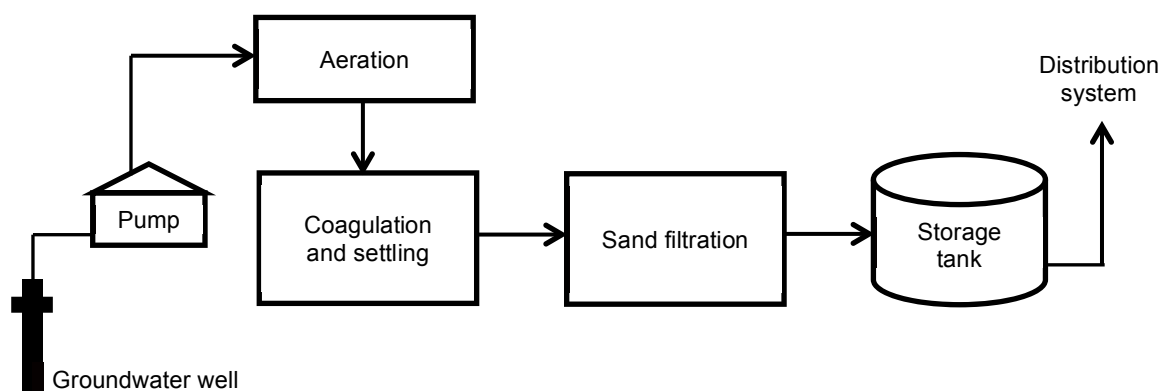


## Supplementary Materials

**Figure S1. Illustration for typical process of a drinking water treatment plant in Hanam province.**



**Table S1. Result of As analysis from all collected water samples (SFW: Sand filtered water; PW: Piped water; SRW: Stored rain water; RGW: Raw groundwater)**

Household ID	Type of water	As concentration (µg/L)	Mean As conc. (µg/L)	Range of As conc. (µg/L)
<b>Nhat Tan commune</b>			<b>61.7</b>	<b>1.34–298</b>
VN01	SFW	101		
VN04	SFW	129		
VN06	SFW	126		
VN07	SFW	25.2		
VN10	SFW	7.77		
VN12	SFW	114		
VN14	SFW	37.5		
VN16	SFW	14.2		
VN17	SFW	15.5		
VN18	SFW	117		
VN23	SFW	6.4		
VN26	SFW	111		
VN30	SFW	68.3		
VN37	SFW	1.5		
VN40	SFW	1.34		
VN42	SFW	52.8		
VN43	SFW	41		
VN49	SFW	298		
VN51	SFW	219		
VN54	SFW	151		
VN55	SFW	103		
VN57	SFW	1.8		
VN59	SFW	200		
VN60	SFW	38.1		
VN02	PW	42.9		

VN03	PW	49.3		
VN05	PW	42.2		
VN09	PW	35.6		
VN11	PW	47.8		
VN13	PW	26.3		
VN15	PW	52.8		
VN19	PW	46.3		
VN21	PW	19.4		
VN25	PW	48.2		
VN27	PW	55.1		
VN28	PW	38.6		
VN29	PW	46.9		
VN31	PW	43		
VN33	PW	42.7		
VN34	PW	52.8		
VN35	PW	51.5		
VN38	PW	33.7		
VN41	PW	39.3		
VN44	PW	57		
VN45	PW	121		
VN46	PW	48.8		
VN47	PW	92.6		
VN48	PW	47.2		
VN52	PW	40.7		
VN53	PW	41.4		
VN58	PW	41.9		
VN56	SRW	20.6		
VN08	SRW	6.03		
VN20	SRW	19.9		
VN22	SRW	41		
VN24	SRW	23.7		
VN32	SRW	1.4		
VN36	SRW	93.1		
VN39	SRW	37.3		
VN50	SRW	175		
<b>Hoang Tay commune</b>			<b>65.7</b>	<b>2-220</b>
VH06	RGW	220		
VH18	RGW	97.9		
VH01	SFW	68.5		
VH02	SFW	17.3		
VH03	SFW	23.5		
VH04	SFW	172		
VH05	SFW	20.2		
VH07	SFW	13.6		
VH09	SFW	191		
VH10	SFW	52.4		
VH11	SFW	37.4		
VH12	SFW	37.7		
VH14	SFW	23.6		
VH15	SFW	30		
VH16	SFW	45		
VH17	SFW	missing		

VH20	SFW	22.9		
VH22	SFW	13.8		
VH23	SFW	214		
VH24	SFW	50		
VH25	SFW	206		
VH08	SRW	2		
VH13	SRW	2.3		
VH19	SRW	11.2		
VH21	SRW	2.7		
<b>Van Xa commune</b>			<b>27.2</b>	<b>0.9–51.6</b>
VV01	SFW	43.1		
VV02	SFW	46.5		
VV04	SFW	33.1		
VV05	SFW	43.6		
VV06	SFW	11.6		
VV07	SFW	51.6		
VV08	SFW	23.9		
VV09	SFW	24.5		
VV10	SFW	7.2		
VV11	SFW	13.6		
VV03	SRW	0.9		
<b>Ba Sao commune</b>			<b>0.59</b>	<b>0.12–1.81</b>
VB08	RGW	0.49		
VB09	RGW	0.38		
VB10	RGW	0.24		
VB11	RGW	0.22		
VB12	RGW	0.4		
VB13	RGW	1.16		
VB02	RGW	0.36		
VB03	RGW	0.74		
VB04	RGW	0.55		
VB06	RGW	0.38		
VB14	RGW	0.35		
VB16	RGW	0.5		
VB18	RGW	0.33		
VB19	RGW	0.31		
VB21	RGW	0.43		
VB22	RGW	0.49		
VB23	RGW	0.15		
VB24	RGW	0.55		
VB25	RGW	0.38		
VB26	RGW	0.6		
VB27	RGW	0.5		
VB28	RGW	0.31		
VB29	RGW	0.37		
VB31	RGW	0.38		
VB32	RGW	0.12		
VB33	RGW	0.21		
VB35	RGW	0.24		
VB07	SFW	0.2		
VB01	SRW	0.9		
VB05	SRW	1.46		

VB15	SRW	1.56		
VB17	SRW	1.5		
VB20	SRW	1.54		
VB30	SRW	0.52		
VB34	SRW	1.81		
<b>Thi Son commune</b>			<b>1.28</b>	<b>0.12–1.3</b>
VT01	RGW	1.3		
VT10	RGW	1.83		
VT12	RGW	0.64		
VT16	RGW	1.17		
VT22	RGW	1.98		
VT27	RGW	2.1		
VT29	RGW	0.12		
VT30	RGW	0.31		
VT33	SFW	0.12		
VT02	SFW	0.67		
VT07	SFW	0.98		
VT09	SFW	7.8		
VT13	SFW	1.02		
VT18	SFW	0.19		
VT20	SFW	1.11		
VT26	SFW	0.14		
VT28	SFW	1.67		
VT31	SFW	2.84		
VT34	SFW	0.7		
VT37	SFW	0.85		
VT08	PW	1.56		
VT11	PW	1.73		
VT14	PW	1.06		
VT15	PW	1.42		
VT17	PW	1.71		
VT25	PW	1.37		
VT03	SRW	0.12		
VT04	SRW	1.95		
VT05	SRW	1.01		
VT06	SRW	1.06		
VT19	SRW	1.5		
VT21	SRW	2.38		
VT23	SRW	0.13		
VT24	SRW	1.1		
VT32	SRW	1.05		
VT35	SRW	0.71		
VT36	SRW	0.78		
<b>Kha Phong commune</b>			<b>0.6</b>	<b>0.19–1.4</b>
VK01	RGW	0.22		
VK03	RGW	0.19		
VK02	SRW	1.4		

**Table S2. As concentration of all types of water samples in three study communes**

	As concentration ( $\mu\text{g/L}$ )		% of sample with As level > 10 $\mu\text{g/L}$	% of sample with As level > 50 $\mu\text{g/L}$
	Mean conc.	Range		
Raw groundwater	159	98–220	100	100
Sand filtered water	67.6	1.34–298	90	40
Piped water	48.3	19.4–121	100	26
Stored rainwater	31.3	0.9–175	57	14

**Table S3. Result of As(III) analysis**

Household ID	Type of water	Concentration of As(tot) ( $\mu\text{g/L}$ )	Concentration of As(III) ( $\mu\text{g/L}$ )	Mean As(III) conc. ( $\mu\text{g/L}$ )	Range of As (III) conc. ( $\mu\text{g/L}$ )
<b>Nhat Tan</b>				<b>24.4</b>	<b>1.18–191</b>
VN01	SFW	101	55.3		
VN02	SFW	129	3		
VN10	SFW	7.8	2.5		
VN12	SFW	114	22.3		
VN16	SFW	14.2	4.3		
VN17	SFW	15.5	8.4		
VN26	SFW	111	5.2		
VN30	SFW	68.3	1.2		
VN51	SFW	219	15.7		
VN54	SFW	151	1.9		
VN55	SFW	103	3.6		
VN60	SFW	38.1	2.3		
VN59	SFW	200	191		
VN13	PW	26.3	9.8		
VN41	PW	39.3	8.7		
VN45	PW	121	40.6		
VN39	SRW	37.3	3.2		
VN50	SRW	175	70		
VN56	SRW	20.6	8.8		
<b>Hoang Tay</b>				<b>71.6</b>	<b>0.4–230</b>
VH18	RGW	97.9	30.5		
VH06	RGW	220	152		
VH02	SFW	17.3	2.7		
VH09	SFW	191	170		
VH11	SFW	37.4	2.4		

VH03	SFW	23.5	12.4		
VH14	SFW	23.6	2.5		
VH23	SFW	214	230		
VH25	SFW	206	0.4		
<b>Van Xa</b>				<b>3.4</b>	<b>1.28–5.67</b>
VV02	SFW	46.5	2.27		
VV06	SFW	11.6	2.57		
VV08	SFW	23.9	5.67		
VV09	SFW	24.5	5.1		
VV11	SFW	13.6	1.28		
<b>Thi Son</b>				<b>1.3</b>	<b>0.19–2.06</b>
VT27	RGW	2.07	0.19		
VT09	SFW	7.76	2.06		
VT28	SFW	1.67	1.67		