Benefit Cost Memo
Econ 475
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Background: Significant uncertainty exists regarding the full extent of health harms caused by all PFAS chemicals, especially for PFAS other than PFOA and PFOS. Moreover, many known health harms cannot easily be monetized because underlying studies were carried out on animals or benefit endpoints may be less tangible than observed clinical costs. There is also uncertainty in the frequency of occurrence of PFAS compounds across drinking water systems, with some reports suggesting low levels of occurrence nationwide and others suggesting a majority of systems have some detectable PFAS. Nevertheless, you must interpret available cost and benefit numbers to argue for a specific policy for controlling PFAS in drinking water. You have been presented with three regulatory options. Confidence interval cost and benefit numbers for each option are presented below. These cost and benefit numbers include wide ranges in possible benefits as well as costs because of underlying uncertainty in damages and in occurrence. Approximate costs to households that pay water bills are also shown across small rural systems and large urban systems in Table 2. These again reflect wide ranges in possible impacts due to underlying uncertainty.

Three regulatory options:

1) Two MCLs: Regulate PFOA and PFOS alone with maximum contaminant levels. You can choose a low MCL that mitigates most known risks or a high MCL that costs less for water systems to maintain but does not mitigate all risks.
2) Six MCLs: Regulate PFOA, PFOS, PFNA, PFHxS, PFHpA, and PFBS with maximum contaminant levels. You can choose a low MCL that mitigates most known risks or a high MCL that costs less for water systems to maintain but does not mitigate all risks.
3) Treatment Technique: Set a treatment technique standard for all PFAS chemicals. Water systems may need to implement your treatment technique based on a low action level (AL) or a higher action level (AL), again with disparate benefits and costs depending on the AL threshold.

Table 1: Quantified National Costs and Benefits (millions of $2020) (2022-2072)

	Low MCL/AL			High MCL/AL		
	Low Estimate	**Expected Value**	**High Estimate**	**Low Estimate**	**Expected Value**	**High Estimate**
Option 1: Two MCLs						
Costs	$250	$500	$800	$125	$250	$400
Benefits	$425	$1000	$2000	$250	$600	$1200
Net Benefits	**$175**	**$500**	**$1200**	**$125**	**$350**	**$800**
Option 2: Six MCLs						
Costs	$600	$1320	$1460	$190	$525	$775
Benefits	$550	$1200	$2250	$300	$790	$1430
Net Benefits	**-$50**	**$120**	**$790**	**$110**	**$265**	**$655**
Option 3: Treatment Technique						
Costs	$1320	$1980	$2446	$1185	$1450	$1795
Benefits	$750	$1550	$2300	$700	$1070	$1675
Net Benefits	**-$570**	**-$430**	**-$146**	**-$485**	**-$380**	**-$120**

* Note: these regulatory options and benefit cost numbers are completely fictional.

Table 2: Costs to Water Ratepayers ($2020) (2022-2072)

	Small Systems			Large Systems		
	Low Estimate	**Expected Value**	**High Estimate**	**Low Estimate**	**Expected Value**	**High Estimate**
Option 1: Two MCLs						
Annual Cost per Household	$80	$150	$200	$25	$40	$55
Option 2: Six MCLs						
Annual Cost per Household	$200	$320	$450	$60	$75	$90
Option 3: Treatment Technique						
Annual Cost per Household	$360	$510	$675	$110	$135	$150

* Note: these regulatory options and ratepayer cost numbers are completely fictional.