

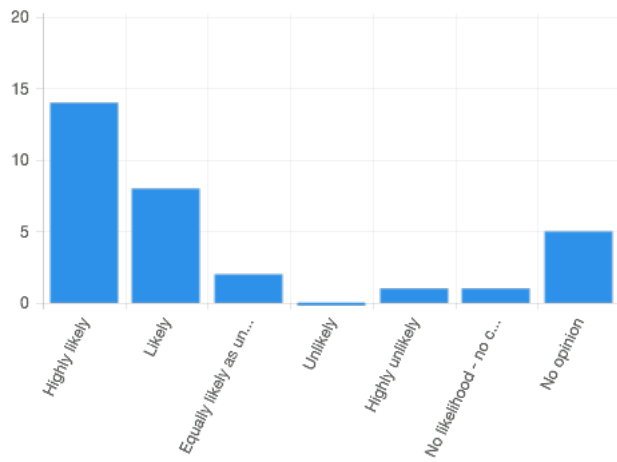
SURVEY RESULTS

Academy of Toxicological Sciences - Global Climate Change

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URL: <https://app.scipinion.com/surveys/128/report.pdf?debug=true>

How likely do you think it is that rising global temperatures could lead to increased oceanic algal production (consequent to warmer oceanic surface temperatures) and the increased release of algal toxins such as domoic acid or cyanotoxins?



Legend

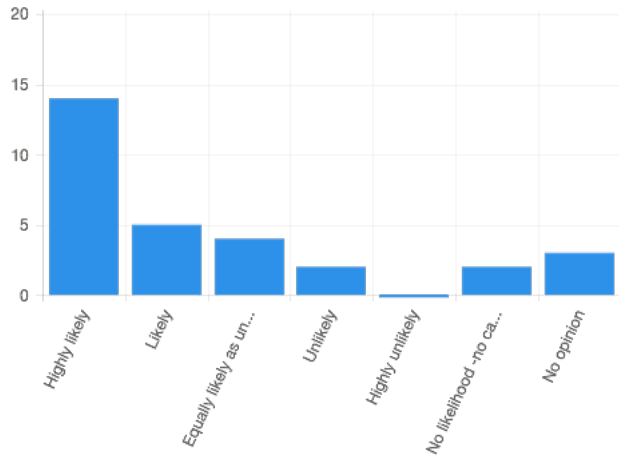
- Highly likely: 14
- Likely: 8
- Equally likely as unlikely: 2
- Unlikely: 0
- Highly unlikely: 1
- No likelihood - no causal correlation between increased temperature and production of algal toxins: 1
- No opinion: 5

answers: 31  
skips: 0

Answer Explanations 11

ANSWER	EXPLANATION
Highly likely	These events happen every year in smaller bodies of water and are directly related to increasing water temperature. There will also likely be increases in blooms of dinoflagellate populations (e.g. 'red tide') leading to increased dinoflagellate toxins.
Highly likely	There is evidence that this is already occurring
Highly likely	The scientific literature highlights this as a highly probable outcome
Likely	ALGIES RESPOND POSITIVELY TO INCREASING TEMPERATURE BY MULTIPLYING QUICKLY HENCE THE DESIRE BY PETROLEUM COMPANIES TO FARM THEM FOR POTENTIAL SOURCES OF ENERGY, I.E. CARS ETC.
Highly likely	Evidence strong this is already occurring.
No opinion	I don't know anything about algal production.
Highly likely	Already happening
No likelihood - no causal correlation between increased temperature and production of algal toxins	Global temperature has nothing to do with this. Simply local.
Highly unlikely	The ocean has a remarkable ability adapt homeostatically. Increased algal production is likely to be offset by consumption. I very much doubt that measurable increases in algal production will translate to increased algal toxins unless the entire ocean ecosystem is devastatingly disrupted.
Likely	The ice core record for the last million years documents an alternation of glaciation and warmest peaks with a periodicity lasting an average of 40K years. We don't know the actual causes of this sinusoid behavior, which could be some periodicity in solar output, changing oceanic salinity, changes on vegetal ground and ocean cover, terrestrial magnetism and many more possibilities perhaps acting synergistically. We are now still emerging from the last glaciation with another 10-15K years to go before reaching the historical max of the sinusoid. If change is likely to follow history, on the way to that target the planet will experience sudden increases and decreases of global temperature - probably on a 100-500 year scale - with the former eventually prevailing. Reaching the historical peak should add around 8-10 C° to the current global temperature. Human activity may or may not alter natural global variations, but current anthropogenic global warming conjectures targeting a few decades seem a bit rush, against a natural warming scale of around 20K years and a 20 C° excursion from min to max.
Equally likely as unlikely	The world wide temperature record on which this question is based is terrible. It is constantly adjusted with no clear explanations and has changed substantially since the original measurements were made. At the very least, this would be problematic in any other field of study, but climate scientists are not only not alarmed by it, but they defend it with an due amount of certainty.

How likely do you think it is that rising global temperatures could lead to altered insect vectors (eg, both increased growth and range) and thus an elevation in transmitted human disease or, through increased use of pesticides, a consequent increase in human pesticide exposures?



Legend

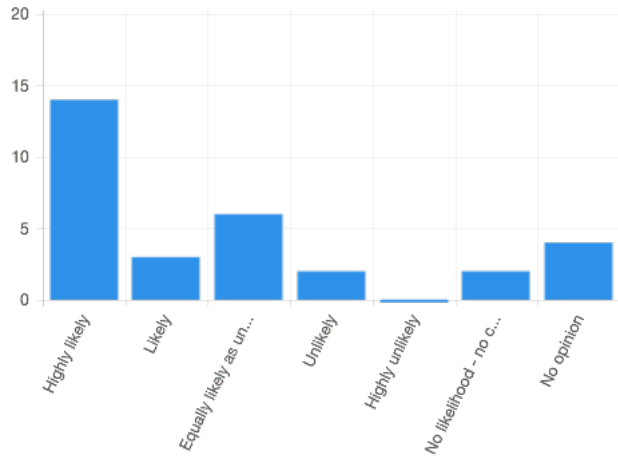
- Highly likely: 14
- Likely: 5
- Equally likely as unlikely: 4
- Unlikely: 2
- Highly unlikely: 0
- No likelihood -no causal correlation between increased temperature and insect problems: 2
- No opinion: 3

answers: 30  
skips: 1

Answer Explanations 11

ANSWER	EXPLANATION
Highly likely	Again, it's already happening with northward migration of invasive insect species in the Americas, due to milder northern climates (e.g. Africanized bees, ticks carrying Lyme Disease)
Highly likely	We are already finding insect vectors in areas they were not in before and are seeing former tropical diseases in more northern climates
Equally likely as unlikely	There's no doubt that changing climate will change insect vectors but not clear how that would necessarily lead to an increase in disease transmission
Likely	EVIDENCE EXISTS INDICATING AT THE PRESENT TIME, FOREIGN INSECTS ARE ON THE MOVE NORTHWARD AND SOME MAY REACH THE US WITHIN A FEW YEARS, I.E. FIRE ANTS ARE ALREADY HERE.
Highly likely	Again, evidence that this is already occurring.
No likelihood -no causal correlation between increased temperature and insect problems	There is no steady increase in temperature anywhere in the world but in the arctic recently and there are no insect in the arctic. Other areas have seen increase for a few years, then decreases. The use of "global average temperature" is stupid.
Highly likely	Already happening
No likelihood -no causal correlation between increased temperature and insect problems	Nothing global. Simply local.
Unlikely	It is reasonable to foresee arisk in insect vectors in regions that become more tropical. However it is unclear that this would translate to increased human pesticide exposure as the regions that become more tropical might not have human densities high enough to cause an increased use and exposure to pesticides.
Likely	Likely to happen in several thousand years. At the max natural warming adding some 8 C° to average plane's temperature, it is likely that current equatorial temperatures and climate will have gradually migrated to mid north and south latitudes.
Unlikely	The temperature excursion daily in temperate zones is often more than 20°C (day to night difference). We are stressing over changes of 0.1°C for which the data are patently unreliable. There could be problems, but the data are totally inadequate to determine if there really are. Any toxicology or epidemiology journal would reject out of hand most of the climate science papers I have read.

How likely do you think it is that rising global carbon dioxide levels will decrease oceanic pH and thus increase solubility of toxic metals which could affect oceanic ecosystems?



Legend

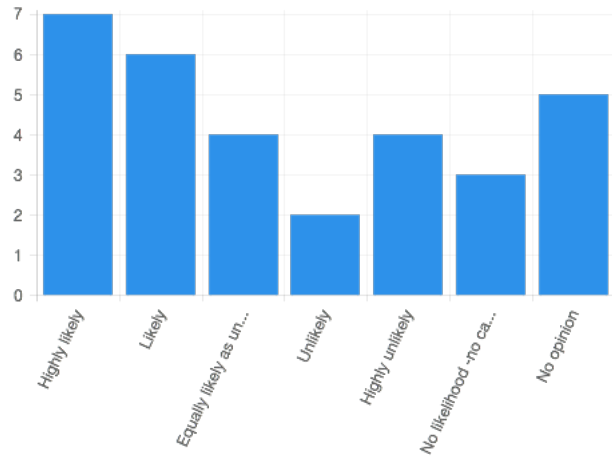
- Highly likely: 14
- Likely: 3
- Equally likely as unlikely: 6
- Unlikely: 2
- Highly unlikely: 0
- No likelihood - no causal correlation between carbon dioxide levels, oceanic pH, and metal concentrations: 2
- No opinion: 4

answers: 31  
skips: 0

Answer Explanations 11

ANSWER	EXPLANATION
Highly likely	This is basic inorganic carbon dioxide chemistry!
Highly likely	Already evidence for acidification of oceans
Highly likely	Again, the literature supports this mode of action
Equally likely as unlikely	POSSIBLE BUT NEED MORE INFORMATION.
No likelihood - no causal correlation between carbon dioxide levels, oceanic pH, and metal concentrations	This is impossible. Henry's law is clear. If a liquid is warmer a gas will exit the liquid. If the global carbon dioxide levels increase in the air, Henry's law specifies that more carbon dioxide would enter the water. However if global warming is really true then the ocean water temperature will also increase. Furthermore, how much of carbon dioxide exists as carbon dioxide in the acid form in the oceans. Maybe 2%. The oceans are water, sure, but what is in it captures carbon dioxide very easily. Well known. And then which oceans are we talking about, and then which areas of the oceans are we talking about, like where we have coral growth?
Equally likely as unlikely	We've already seen alterations in upper level ocean pH, but to tie it to metals or other toxins seems premature or overly speculative. You could probably say it is possible for almost anything.
Highly likely	Already happening
No likelihood - no causal correlation between carbon dioxide levels, oceanic pH, and metal concentrations	There is no mechanism for CO2 to decrease pH in the ocean.
Unlikely	The ocean is a very homeostatic body that will adapt unless pushed markedly to an extreme.
No opinion	Which metals (iron?) are likely to increase above NOAEL levels?
Equally likely as unlikely	My answer actually indicates that we simply do not have enough data to know. This could be a problem, or maybe not. It should be noted that ocean pH varies enormously over time and location, so minor changes that we can't be sure have been accurately measured should not be cause for anything other than additional (and better) research

How likely do you think it is that rising global temperatures will lead to increased volatility, transport and bioavailability of semi-volatile toxics (e.g., PCBs, dioxins) that, in turn, lead to increased human and ecosystem exposures and toxicity?



Legend

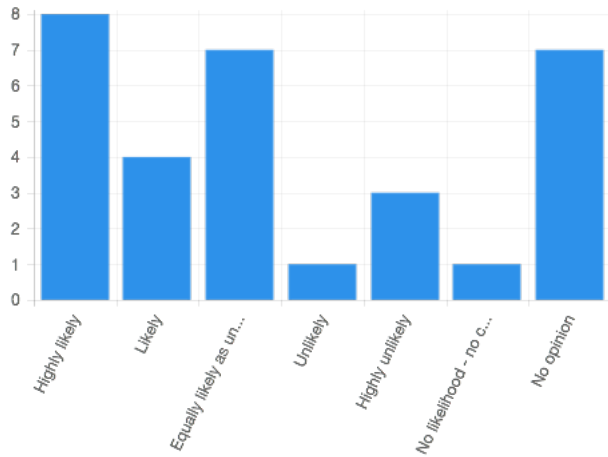
- Highly likely: 7
- Likely: 6
- Equally likely as unlikely: 4
- Unlikely: 2
- Highly unlikely: 4
- No likelihood -no causal correlation between increased temperature and semivolatile production: 3
- No opinion: 5

answers: 31  
skips: 0

Answer Explanations 12

ANSWER	EXPLANATION
Likely	Basic gas physics: $PV = nrT$
Highly likely	We already know that PCBs and other SVOCs undergo global distillation and move via volatilizations from warmer to colder climates. With the melting of the Arctic ice, there are more releases of these compounds into the environment
Equally likely as unlikely	This seems hypothetical at present
Unlikely	Differential temperatures are nor that great.
No opinion	THIS IS VERY THEORETICAL AND WOULD LIKE TO SEE SOME DATA INDICATING THE POSSIBILITY.
Equally likely as unlikely	Would depend heavily on the degree of volatility.
No likelihood -no causal correlation between increased temperature and semivolatile production	Nonsense. Semi-volatile? What is semi-volatile? Give us a vapor pressure value or range so we can estimate how much more, really, would these chemicals evaporate. The forests, vegetation, microbial decomposition, termites, etc. are producing, exhaling, volatile and semi-volatile chemicals all year round as well as carbon dioxide.
Highly likely	Happening
No likelihood -no causal correlation between increased temperature and semivolatile production	Pure nonsense. If the air temperature increases by 1, 2, 3 degrees it will not increase "semi-volatile chemicals" toxic or not. Completely irrelevant.
Highly unlikely	semi volatile toxics are so tightly bound to soil and like carbonaceous substances that it seems highly unlikely global temperatures could rise high enough to affect their environmental transport.
No opinion	We can only speculate, but cannot factually predict. What's more dangerous: putative hazards or policies and regulations based on unverifiable conjectures?
Highly unlikely	The temperature differences we are talking about are dozens of times less than the daily excursion between day and night temperatures, and I don't seem to see much concern about effects of toxicants differing in day or night (other than due to circadian rhythms).

How likely do you think it is that GCC will lead to increased exposure to and consequent toxicity from Polycyclic Aromatic hydrocarbons (PAHs)? (This could be direct, as increased forest fires that generate PAHs, or indirect by an increased acidity of water, leading to deeper UV penetration and increased UV photoactivation of PAHs.)



Legend

- Highly likely: 8
- Likely: 4
- Equally likely as unlikely: 7
- Unlikely: 1
- Highly unlikely: 3
- No likelihood - no causal correlation between GCC and PAH production: 1
- No opinion: 7

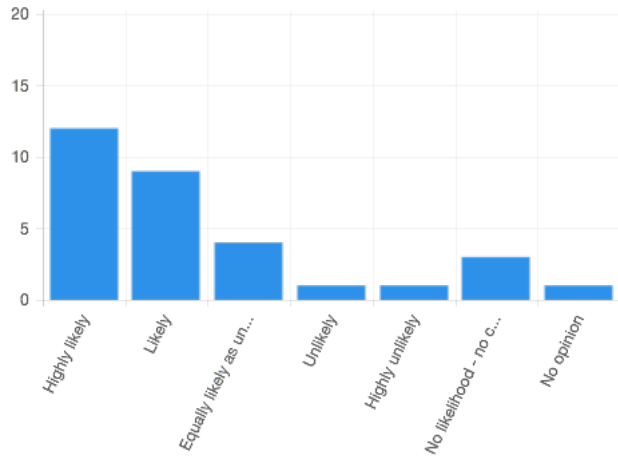
answers: 31

skips: 0

Answer Explanations 11

ANSWER	EXPLANATION
Highly likely	Already evidence for increase in forest fires
Equally likely as unlikely	This seems hypothetical at present
No opinion	UNKNOWN! DATA?
Likely	Greater concern regarding PM.
No opinion	Trying to answer this very complex question. No thank you.
No likelihood - no causal correlation between GCC and PAH production	The question is too broad.
Highly likely	Already seeing increase in forest fires
No opinion	How can one use this "complex" question. Just stupid question.
Highly unlikely	Even if there is any increased toxicity, which I consider to be highly unlikely, it would be near impossible to measure against a background of human disease.
No opinion	Again, these are unverifiable conjectures. Is it ethical to use them to foment public anxieties, and thus to demand and obtain more funds and resources from the economy?
Highly unlikely	There is no evidence that temperature change to date has increased adverse events such as floods, hurricanes, droughts, fires, etc. Look it up! In fact, until last year we had been in a period of about 12 years with a record low number of hurricanes.

How likely do you think it is that changes (e.g., increases) in environmental temperatures will lead to changes in the disposition (e.g., absorption, distribution, metabolism) of chemicals in the environment?



Legend

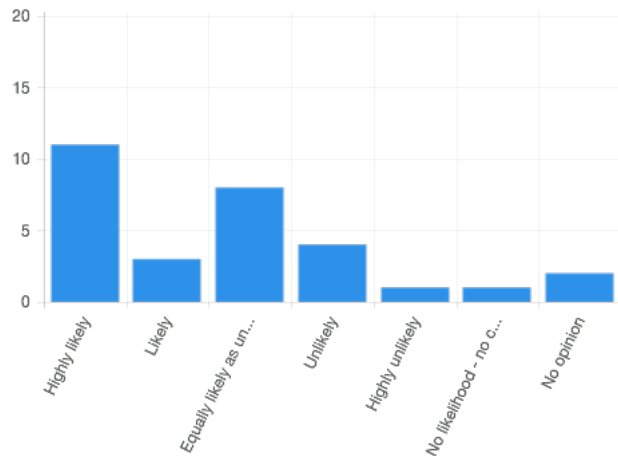
- Highly likely: 12
- Likely: 9
- Equally likely as unlikely: 4
- Unlikely: 1
- Highly unlikely: 1
- No likelihood - no causal correlation between temperature and chemical disposition: 3
- No opinion: 1

answers: 31  
skips: 0

Answer Explanations 7

ANSWER	EXPLANATION
Highly likely	Its almost certain these increases will lead to ADME changes but whether this is adverse or not in unclear
Likely	WITH INCREASED TEMPERATURE, CHEMICALS COULD BECOME MORE VOLATILE AND BE SPREAD BY WIND AND THEN ABSORBED/INHALED BY ANIMALS AND PASSED ALONG TO MEMBERS OF THEIR SPECIES AND PERHAPS AMONG SPECIES. METABOLISM AND EXCRETION WILL ALSO PROVIDE ADDITIONAL EXPOSURES.
No likelihood - no causal correlation between temperature and chemical disposition	There is not even a published graph showing that the increase in CO2 correlates with the increase in the average global temperature. NONE. And no published regression analysis that would implicate the increase in CO2 with the increase in "global warming". So yes we have local areas, some very large like the arctic with some increase in temperature. But this is it.
No likelihood - no causal correlation between temperature and chemical disposition	Distribution is based on a person temperature. NOT on environmental temperature!
Highly unlikely	See response to question 4.
Likely	Turnover studies in current equatorial environments could provide some clues....
No likelihood - no causal correlation between temperature and chemical disposition	How would this happen? Are you assuming that the body temperature of poikilothermic animals will be changed by global temperature differences more than they are now changed by the huge differences in temperature between seasons or between night and day. Come on, get serious.

If GCC involves increased temperature extremes with consequent increases in ozone formation and particulate matter, how likely is it that these factors will increase the incidence of human diseases (e.g., cardiovascular disease)?



Legend

- Highly likely: 11
- Likely: 3
- Equally likely as unlikely: 8
- Unlikely: 4
- Highly unlikely: 1
- No likelihood - no causal correlation between levels of ozone or particulate matter and the incidence of human disease: 1
- No opinion: 2

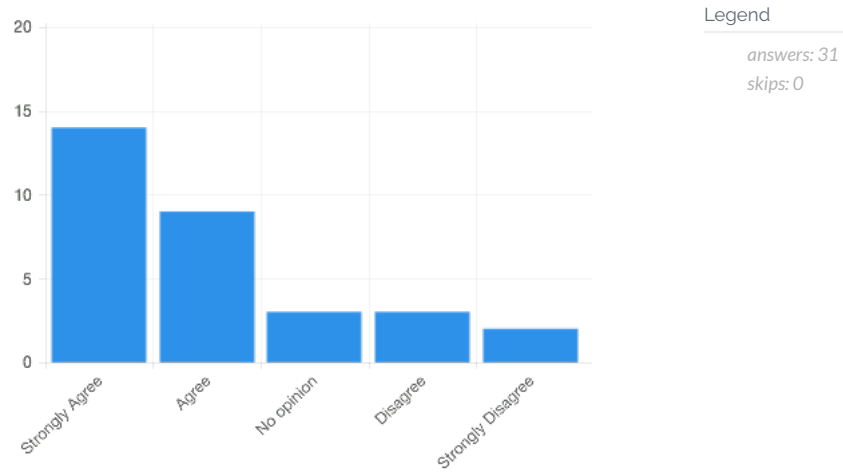
answers: 30  
skips: 1

Answer Explanations 11

ANSWER	EXPLANATION
Highly likely	The relationships between the atmospheric ozone layer and human health are established.  Already evidence for increase CVD during heat waves
Equally likely as unlikely	Not sure I get the connection between extremes and increases in ozone/particulates...but I do get the link between ozone/particulates and disease
Highly likely	Tropospheric ozone is marker for a host of other air pollutants and and the epidemiological associations are often confounded and do not address causality. The same applies to PM2.5 where chemical composition is very rarely considered in epidemiology studies. This also results in confounding and likely reduces the linkages and obscures causality.
Unlikely	No correlation here
Equally likely as unlikely	IT IS POSSIBLE BUT I WOULD LIKE TO SEE SOME DATA.
No opinion	Again a very complex question. Increases in temperature causing increase will now cause ozone formation and increase in particulate matters. Please go on.
Unlikely	The increased doses are not likely to increase human diseases because disease-producing doses are already small and modest increases should have no important adverse human health effects.
No likelihood - no causal correlation between levels of ozone or particulate matter and the incidence of human disease	Who demonstrated that such increases will happen. How stupid is this question: Increases temperature extreme! What is extreme temperature increases?
No opinion	What are extreme temperature changes? Do we know they will decrease the ozone layer and increase air particulates? Are current open air particulate levels different in equatorial and mid latitude environments?
Unlikely	Please see previous answers. We are talking noise around baseline here for anything that could be measured toxicologically. Let's please avoid the groupthink and rush to create a problem for which we can get funded into which climate science has fallen.



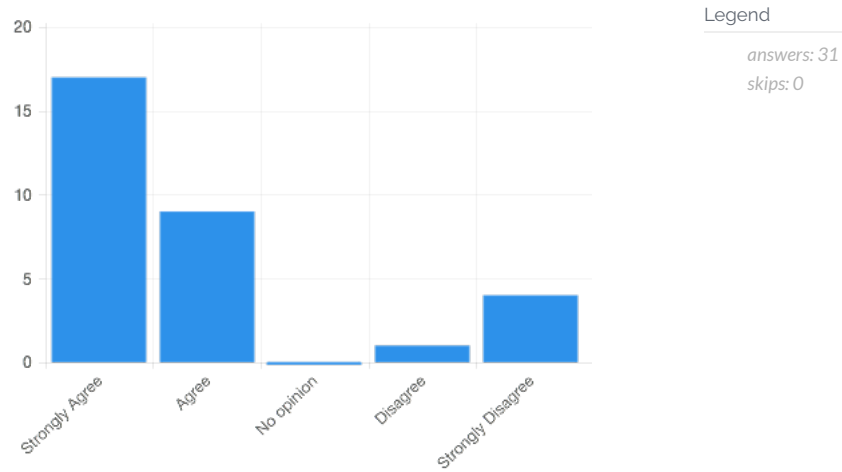
Toxicologists should be engaged in risk assessments which incorporate potential GCC-related factors in models of human and ecological exposure and response.



Answer Explanations 9

ANSWER	EXPLANATION
Strongly Agree	If we don't who will?
Strongly Agree	I do this already as a member of the UNEP Environmental Effects Assessment Panel, which reports to the parties of the Montreal Protocol.
Agree	Seems to be a useful task
No opinion	TOXICOLOGISTS WITH THOSE SPECIALTIES ARE BEST TO ANSWER.
Strongly Disagree	What we have now and it is REAL, no BS about global warming is this. Nanoparticles, nanotechnology-based consumer products simply huge increase in the last two decades. We have all kinds of REAL exposures of humans to new products like impregnation sprays, documented and published by emergency physicians all over the world since 1992. Just one well documented example. Are toxicologists likely to provide what is needed for these new chemicals? And they are coming and coming and coming. This is real. No BS global warming
Disagree	We have enough problems to solve now without these "possible"...
Strongly Agree	Without toxicologists involved, unreasonable non-scientific risk assessments will be the result.
Disagree	Because toxicologists can immediately affect public opinion and anxieties, they have a moral obligation to be factual and to reject the parasitic instincts of promoting untestable foreboding conjectures.
Strongly Disagree	It will put us in the same category as many climate scientists, which will eventually (in my opinion) do irreparable harm to all science. Toxicologists should run, not walk away from climate science until that group gets its act together and actually has some convincing results.

Risk assessments should proactively drive evaluation of future actions to mitigate or adapt to those risks (e.g., science guiding policy decisions).



Answer Explanations 11

ANSWER	EXPLANATION
Strongly Agree	We are obliged to take all relevant information into account when conducting risk assessments
Strongly Agree	UNEP Environmental Effects Assessment Panel, which reports to the parties of the Montreal Protocol already does this
Agree	The above answers are rapidly generated opinions based on scientific knowledge within my areas of expertise as well as accumulated past experience.
Agree	Again, seems to be a useful task
Strongly Agree	THIS IS WHY WE DO WHAT WE DO!
Strongly Disagree	I don't know a single toxicologist capable of doing risk assessment for any chemical. This question demonstrates exactly that toxicologist have absolutely no idea what risk assessment is. When we have toxicologists at EPA deciding that CO2 is a pollutant we are in serious trouble, the idea that we should be proactive to mitigate risks due to CO2 increase is absurd. They do not even call CO2 carbon dioxide. They call is carbon. Yes we must reduce carbon emission. How absurd.
Strongly Disagree	The risk assessment process currently used is flawed in that important trade-offs related to health (loss of jobs and increased cost of goods and services) are not considered. Use of such one-sided risk assessments can increase adverse health effects in large regions of the US. The evidence is strong, especially in the Western states.
Strongly Disagree	There is no "science" in those risks. Just "models" with only one issue, possibly increasing CO2.
Strongly Agree	Strongy agree provided that the risk assessments involve competent toxicologists such as those certified by ATS.
Strongly Disagree	The obligation of scientists is to provide experimentally tested and reproducible findings that can be verified counterfactually by successful technological applications. No successful technology could exist if not based on verifiable evidence. Science includes verified knowledge as well as research hypotheses. Of the latter, only those that can be tested are of interest to science and scientists, while untestable ones are not. Ethically, science must influence policy decisions and regulations when providing factual evidence, but has no business influencing the same with hypotheses that are untested or impossible to test. The latter would amount to parasitic pandering and crying fire in a crowded theater without evidence of fire. Precautionary policies and regulations may be desirable, but have nothing to do with science and should be based on socially debated tradeoffs between desired uses and affordable precaution.
Strongly Agree	Of course, but they must be based on good data and not on groupthink driven interpretations and conclusions from that data.

# General Debate 4

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SCORE -1	user-805880 Come on folks, the differences in global temperature in are in the 0.1° range. Daily and seasonal temperature variations are vastly greater than this everywhere in the world. In toxicology, even with genetically identical animals in identical housing, we tend to regard changes less than about 10% as background noise. Does anyone really think that changes in toxicology outcomes caused by temperature change in the 0.1° can even be reliably detected? If so, please explain.	02/26/2018 08:02
SCORE -1	user-805880 Please, toxicologists, let's stay out of this quagmire of groupthink and use of unvalidated models to predict dire outcomes. We need to maintain our standards, which are much higher than those in climate science.	02/26/2018 08:05
SCORE -1	user-846102 We do not live in global warming. We live in local with our own seasonal changes in weather.	05/17/2018 05:53
SCORE -1	user-505496 I agree with user 805880. Global warming is nonsense.	05/14/2018 17:44

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