

AMERICAN INSTITUTE OF CHEMICAL ENGINEERS

ENERGY EDUCATION AND COMMUNICATIONS



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PROPOSED INVOLVEMENT OF AIChE SECTIONS AND CHAPTERS IN ENERGY EDUCATION AND COMMUNICATIONS (EEC)

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COMMITTEE CORRESPONDENCE

In reply please address:

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...You (AIChE Sections) have listed "energy" and "educating the public" as your prime concerns. Our committee has drafted several position statements (one of which is attached in the form of a newspaper article, "Understanding Crisis-- Challenges of the 4E's"), and developed and tested a variety of indirect and direct approaches to the public. They ranged from a visit with an interested class in grammar school to participation in TV programs and an editors' workshop among 35 of the nation's largest newspapers.

We believe that the more successful approaches are applicable in any community and that the whole activity is now ready for substantial scale-up. Accordingly, we urge each of you to review our experiences over the last year as outlined below, and have your Section (and Student Chapters?) consider the initiation of an EEC activity in your own areas on a high-priority basis.

Let's start with the problem statement. Surveys have repeatedly revealed the existence of widespread ignorance and suspicion on the "energy" issue. Even the most recent polls show that the portion of the public which has finally swung to the realization that we are indeed facing an increasing energy crunch has now increased to just barely beyond half of the total population. According to a Gallup poll published just last week, about half of the public is not even aware of the fact, today, that this nation is no longer self-sufficient in oil, and is a heavy importer of this commodity! The poll also shows that the state of ignorance and suspicion is not limited to the "uneducated", but prevails even among college students and alumni. Close to 40% of that group are still unaware that we are importing oil! (Most of the other 60% don't know how much.)

"Energy" is obviously not the only vital national or world issue on which the public is too uninformed. However, because of the urgent need for actions dealing with our longer-range as well as the near-term problems, the public's lack of awareness and understanding is especially deplorable. It also seems to imply a form of "educational crisis" in our democratic form of society. That is why we have referred to the "challenges of the 4E's", energy, economy, environment... and education!

In this context, no single profession can be expected to have all the answers! In a world of so many opinionated "advocates", we have found that acknowledgment of legitimate differences among fully reasonable and responsible individuals has added to our credibility, rather than subtracted from it. We have also found it to be essential to distinguish between areas of factual knowledge and those of reasoned but still uncertain conjectures or projections;

and between quoted position statements of the Institute or other bodies, and our own individual views. At that, our views have been misquoted or misascribed at times. It just seems that the only way to avoid any chances of that happening is to do nothing!

We have also found it to be very useful to review drafts of our basic talks or articles with knowledgeable and responsible individuals within the AIChE and outside, including elected and appointed public officials and advisors. A number of very useful suggestions and/or favorable reactions were received from such individuals, including (late last year) then Commerce Secretary Elliot Richardson and President-elect Jimmy Carter.

Among prime target audiences, in addition to public school classes or teachers, would be college campuses (especially non-technical audiences like Schools of Journalism and Education, political scientists, et al.). We are usually introduced by local AIChE members, engineering professors or other interested faculty members or students on the campus, who endorse our cause and message.

In my presentations, I typically start with a brief outline of our concerns and the formation of our "EEC" activity. I stress that we are still groping for an effective and constructive approach. At the same time, I refer to recent public polls and try to point out that we might as well fold tent and go home if we cannot even make some impression with folks on a campus! I try to make it clear, however, that I would also like to have their suggestions for useful follow-up, in case I make sense to them...not just expressions of agreement.

To the public communicators (journalists, educators) I also stress that we technologists can only discuss our concerns and needs for action, not precise means of achieving public awareness. That, after all, requires their savvy.

My problem statement plus discussion of reasonable combinations of short and long-range options follows generally along the points in the "Understanding Crisis" article. More recently, we have of course been able to relate to the Administration's and the Republican's energy positions. We try to be objective and constructive in doing so. Though I emphasize the seriousness of the U.S. position, I refer to the even grimmer outlook in other countries, list our strong points and try to point to an acceptable future which would give us time again to innovate and improve our lot.

If I am on a campus, I wind up with a challenge to apply some real imagination and "activism" to this vital "4E" problem, especially the 4th E--education. There are usually very good questions and observations, including offers of further introductions and follow-up...rarely any hostile questions or remarks, if the presentation has been in appropriate balance and frankness.

Among follow-up contacts, in my case, have been articles in student papers (they are free and widely read on the campus), introductions to local editors and educators, and invitations to return, meet student leaders and address large meetings and groups.

We frequently get into the discussion of other broad challenges to our systems of mass- and higher education, including different ways in which we might improve our collective abilities to recognize and deal with our rapidly changing challenges.

If all areas of possible defensiveness on the part of even one or two individuals in the audience are to be avoided at all costs, the speaker will fail and will not receive many repeat invitations. On the other hand, one profession should not come through as too critical of another profession, especially in an area where it lacks experiences and credibility. Expressions of self-examination and some stress on a sharing of problems, rather than "lecturing" should disarm most reasonable audiences. After all, we "technologists" need to accept part of the responsibility to learn how to talk to non-technical individuals in terms that they can understand and retain.

In this connection, you are receiving copies of "speakers' kits" which include some rather technical information on the "energy" topic. These kits are designed to supply supplementary background material to the potential speakers (chemical engineers) who feel the need for such information in certain parts of the subject. The kit is obviously not aimed at non-technical audiences.

Most technical people lack experience and ability to communicate with non-technical audiences. The natural inclination is to cram the listener full of facts and figures, and to use graphs and charts that are much too complex. The inexperienced speaker should by all means test himself on a junior high school student or class before taking on the local Lions Club, League of Women Voters, church or labor group. In fact, it may be excellent practice (and highly revealing) to have the junior high school student express to the AIChE member and/or the class, in his or her own words, what he got out of the speaker's earlier presentation.

In conclusion, we recommend that interested Sections and Student Chapters select an Energy Education Coordinator. He should serve as sparkplug, contact and assigner of speaking commitments. He should also distribute future issues of background information and provide feed-back on activities and experiences.

We also propose the identification of "regional" Coordinators for groupings of Sections/Chapters, matching the regions defined by the Public Relations Committee. Regional coordinators would provide two-way communications and liaison links between the Section/Chapter Coordinators and us.

We feel a sense of professional obligation and concern in this vital area and hope that you will work with us along these lines if you feel likewise. Please forward reactions, suggestions and names of Coordinators to me.

Challenges of the Four E's

Understanding Crisis

By JOHN SHACTER

It occurs to me that the present crisis may be termed the "challenges of the four E's" — energy, economy, environment . . . and education.

Let's take a look at some pertinent points.

1. The energy crisis is first of all an educational crisis! Past political strategies, campaigns and communications have largely failed to address the real nature of the nation's and world's unprecedented "energy" challenges. Many technologists and other experts are now deeply concerned that the likely impacts on the economy, jobs, life-styles, and the environment will get tougher and tougher to deal with, as we continue to postpone public education and thereby the acceptance of vitally needed action.

2. There has been much stress on honesty and trust in our institutions. Yet, some groups and self-styled "friends of the people" have encouraged the public to blame the energy crisis on some sort of sinister "conspiracy" between Arab sheiks and oil companies. As polls show, many people also believe that — except for higher prices for gasoline, heat, electricity, etc. — the fuels crunch has been largely solved. Their faith in their institutions is not going to rise as they are now finding out that they have not been "told it like it is!" There is now an urgent need for more mutual openness and confidence between people and their institutional-professional leadership.

Mistaken Impression

3. Even today, many publicized forecasts allow the mistaken impression that the world can soon expect to return to previous levels of life-styles and economic normalcy. There are few warnings of the rampant inflation and new individual hardships which are in store for most of us, if our collective demands continue to outstrip our resources and our gains in technology and productivity. It is now essential that governmental bodies and all organized sectors of our society be willing to lead and share in a common and deliberately planned belt-tightening process. The consequences of near-sighted, selfish or disruptive courses of action, and a continuing "adversary society," are today well illustrated in Great Britain and some other nations. There are some signs that we may not be all that far behind. If there ever was a time to pull the nation, and world together in a common understanding and effort, this has to be it!

4. The newly formed Energy Education and Communications Committee of the AIChE is attempting to mobilize the nation's educators, professionals and other leaders to clarify the nature of the problem and alternative solutions. The committee has formulated a series of key questions that need to be addressed as part of an "energy policy." In reality, the "energy crisis" is of course part of a growing raw-materials crunch. The world's growing populations and demands have indeed started to overtake gains in technology and productivity, as well as some of the more cheaply available critical resources.

5. In this country, for instance, about ¾ of our energy uses depend upon natural gas and oil! On a world-wide basis, these two fuels are now diminishing. They are therefore converting from abundant and cheap mass-commodities to increasingly scarcer and more precious resources. Regardless of our so-called

"project independence" strategy, the Western nations are spending more and more dollars for oil from the OPEC countries and are jeopardizing their trade balances, currencies and life-styles. Just in the 1970's so far, our own bill for foreign oil has increased ten-fold!

6. At that, because of our food and coal resources, and because of our nuclear and other technology leads, we are in a better position than most other nations such as Japan, the European community or less developed countries. There is still time to take more aggressive action in the more efficient use of the world's shrinking resources, and in developing alternative energy technologies and sources. Though it seems certainly misleading and irresponsible to hold out easy promises of maintaining fuel prices and availabilities, or of national "energy independence," we are still in a position to cushion economic and social blows while we pursue longer-range solutions.

Conservation and Efficiency

7. Under these circumstances, it also seems obvious that we need to stop our zig-zagging between forced conversions from coal to oil and back again, or between highways and railroads, or inefficient and efficient cars, or inconsistent government regulations. We must plan for orderly conservation and more efficient energy uses; for fuel price increases; for the cushioning of special hardships and dislocations; for more effective world relationships and reasonable trade balances; for protection from arbitrary oil embargos and pricing; for a realistic transportation strategy; for responsible but greatly accelerated development of alternative energy sources, such as environmentally and health-safety-wise acceptable coal, nuclear with breeding and effective international safeguards, solar, etc.

8. We also need to stop unrealistic and immensely costly excesses in the vain pursuit of "complete safety or protection." There simply are no energy alternatives without any environmental effects or risks, whatsoever! If we fail to establish reasonable trade-offs and priorities for the investment of our definitely limited resources, or if we apply excessive and unbalanced restrictions to one energy source at a time, we shall only hasten the advent of critical shortages, rationing, and economic stresses which may be more severe than anything since the Great Depression. Such consequences will in turn lead to crash reactions and probably much greater infractions on our environment, health and safety.

As professionals, members of the American Institute of Chemical Engineers and its local sections have been voicing their strong concern about the now urgent needs for public education and action. Other concerned professional, civic, communications and educational groups are sincerely invited to collaborate with our efforts. The longer we delay, the more options we forego.

(Mr. Shacter, who holds a managerial position with Union Carbide Corp. in Oak Ridge, is chairman of the recently formed national Energy Education and Communications committee of the American Institute of Chemical Engineers. The article is adapted from a recent talk before the Futuristics Conference at the University of Tennessee-Knoxville.)

ISSUES IN ENERGY AND EDUCATION
(Energy Education Initiatives of Engineering Societies)
2-23-78

Speakers' Workshop
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1. Why are you engineers concerned about "energy" and public education (awareness)?
2. What do you speakers want to accomplish?
3. What is some of the evidence that the public needs education?
4. Are we (that is, the nation or energy companies) crying wolf again?
5. Why didn't we foresee and avoid the past and current crises?
6. Are we about to solve the crisis-to-crisis operation?
7. Rather than worrying about a "Project Independence", why can't we just import more oil (and gas)?
8. How do imports relate to trade balances or the value of our \$'s?
9. How do imports of natural gas relate to domestic gas price controls?
0. If oil and gas prices increase, won't low income groups be hurt?
1. How do energy questions relate to national security? (reserves, proliferation/terrorists..)
2. Why can't we solve everything by increasing domestic exploration and production?
3. Is the longer-range problem solely an energy-resource problem?
4. Why worry now about the longer-range energy/resources problem?
5. Why doesn't the Government "deregulate" and allow free market forces to solve everything?
6. Wouldn't breaking up the big oil companies solve everything?
7. How would you compare this Administration's emphasis with those of Congress or the previous Administration (or Republicans)?
8. What are the proper roles for Government, if any?
9. What is the position of the engineering societies?
0. Why can't we solve everything by conservation alone?
1. Do you think a no-growth energy strategy is the answer?
2. Can we solve everything by small, decentralized energy sources? How do costs compare?
3. Did our proposed energy plan contain a transportation strategy?
4. Can an all-out coal (fossil?) strategy solve everything? (Environ., CO2, avail.?)
5. How are energy and environment related to jobs and the economy?
6. Don't regulations create jobs?
7. Do we have to chose between energy and environment?
8. Are our regulations treating all energy, etc., consistently? (Radiation from nucl. vs. coal?)
9. What is the possible harm of overshooting on environmental restrictions or regulations?
0. Have we resolved the energy vs. environment dilemma, such as in coal?
1. What are highest-priority applications for our dwindling fossil fuels? Nuclear...?
2. Why aren't we moving faster on synthetic fuels from coal and oil shale?
3. What should we assume regarding new energy sources and technology?
4. What are the pros and cons on new utility rate structures?
5. Why do the engineering societies stress nuclear energy and the breeder?
6. What about Carter's emphasis on non-proliferation, plutonium and fuel recycle?
7. What about nuclear environmental, safety and waste problems? Why the controversies?
8. What are the differences among "breeders", "LMFBR's" and "CRBR's"?
9. Carter called for an effort with the moral equivalent of a war; are we really doing all we can while we try to gain time through conservation, etc.?
0. Why is it "easy" to project our energy situation in the early 1980's?
1. What's the harm of postponing the development of longer-range energy like the breeder?
2. What are the Administration's plans for breeders?
3. Is the most critical problem the remaining 1970's, the 1980's, or the 1990's and beyond?
4. What additional factors are introduced when we look at the world situation?
5. How does the world situation affect our solutions?
6. In what ways are other nations worse off than we are?
7. Can jobs and the economy be maintained if we don't come up with additional energy sources or substitutes? What about the positions of labor, NAACP...?
8. Why should we use any energy sources which have environmental affects or risks?
9. What should we ask of the "critics" of any energy source?
0. Whom are you speakers "representing" and is there complete agreement among you?
1. What specifically can I (we) do? (Personal, family planning; prodding representatives..?)

Local sections can start by developing a list of speakers and dividing their territory for contact (schools, church, civic, campus..groups). Have new speakers "pilot" on a (jr?) high class. Public should be approached on on personal, human, rather than "company-spokesman" basis. Numbers, graphics and other technical jargons or details tend to distract and confuse. Chose goals for talk

SAMPLE OUTLINE OF 15-20 MIN. NON-TECHNICAL TALK
ON THE
"ENERGY CRISIS"
OR
"ENERGY AND EDUCATION"

1. Though there is much we don't know, some facts and trends are obvious:
 - a. Critical raw materials crunches including (not limited to) fossil energy fuels, particularly the "clean" fuels, oil and gas, are developing in this country, and even more so, in other industrially developed nations.
 - b. Just about all professional engineering societies (AIChE, CCE...) have agreed with the President that conservation is essential, but they are also greatly concerned that we are moving too slowly on substitute forms of energy and fuels, particularly synthetics from coal and oil shale, coal itself, and nuclear including the breeder. Work on more advanced sources like solar, fusion, etc., also needs to be accelerated.
 - c. Because we have not done our homework, crisis-to-crisis operation will have to continue for several years, even if we do wake up now.
2. We feel public education is now vital and hope that our educational systems and media can and should take the lead in accomplishing that in a hurry, if our democratic system is to rise to the tasks ahead.
3. This is no time to be choosy or prejudiced on "large" versus "small" energy forms, or on looking for perfect, solutions (there aren't any).
4. Unreasonable regulatory and licensing delays need to be eliminated.
5. Environmental concerns need to be balanced against too much energy delay with a possible future "backlash" against environmental considerations.
6. Individual citizens need to plan their personal affairs accordingly and urge representatives to insist on a real sense of urgency in Washington (Carter's "moral equivalent of war").
7. Additional speakers are available if _____ (phone _____) is contacted.
8. Audience's questions and discussion.

