Submission to the House of Representatives Standing Committee on Science and Innovation Parliamentary Select Committee on Salinity

16th October 2003

Catherine Cornish; Committee Secretary,
House of Representatives
Standing Committee on Science and Technology,
R1 Suite 116,
Parliament House,
CANBERRA ACT 2600

Re: Inquiry into the Coordination of the Science to Combat the Nation's Salinity Problem.

Dear Madam,

I wish to thank the Committee for the opportunity to make this submission expressing my views on a subject that is critical to our national interests.

Despite salinity being recognised as a serious problem to the nation both in the rural and urban environment, the numbers of scientists involved in these problems has not been many, and those involved have been in the main from the ranks of the Water and Plant Industry related Divisions of CSIRO, a select number of Consultants, State public servants, and some University persons. This has been appropriate in the early stages and much good work has been done.

As water and water management has become an important issue, and in more recent times a pressing issue, the question of salinity has loomed larger in the collective conscience, not just as an environmental problem, but also as a limiting factor to both rural and urban initiatives. The division of "rural" and "urban" salinity is itself an artefact of the way in which this issue is segmented. Causes are much the same, but the effect is on divergent activities.

Salinity is a problem that has its roots, and therefore its explanation, beyond surficial studies. Here surficial does not refer to scholarship, but to the objects studies – the surface environment. The scientists involved to date have been in the main from the ecological, geomorphological and plant science disciplines, with only limited inputs from geologists and geochemists.

Our policy makers are using simple models for a set of problems that are far from simple. As an example there has been the almost universal acceptance by the Policy makers of a rising water-table model for all instances of salinity, and added to this the notion that all the salt in salinisation came either from dryland salt on ancient and modern dust, or from salt caught in the atmosphere in recent times. This is tied to the onset of desertification as long-term climate change takes place, and salinity becomes evident. Here we see the need for paleo-climatologists to contribute. There are many other workers capable of contributing, and their work contains applicable detail, but that detail is not being recognised because it is not yet conceptualised into readily usable forms.

Absent from many of the general considerations has been the role of rock weathering and the complexities of water-rock interaction – hydrogeochemistry – which in some instances is capable of exceeding the atmospheric inputs by many times. We have reached the point where we need urgently to expand the scientific "players" in this "game". We urgently need to expand our view on this subject by encouraging workers from other fields. This means effective collaboration and uninhibited sharing of information, not always possible in a world that has privatised intellectual property.

There is an emerging body of literature that challenges the conventional thinking on salinity, and its voice will be louder as time passes. A short paper, with minor modifications, delivered to the launch of the Australian Salinity Action Network is appended that expands some of the above ideas. That paper contains references ordered in terms of the processes that must be considered. The list is not complete, but serves as a sample of what is available. The debate on this topic, which is of critical importance to Australia, must be widened, and more scientific work must be done so as to guide the policy makers and managers charged with seeking and applying solutions. We are presently in a purgatory of half-truths, and we must always remember that half-truths are dangerous, because we may have the wrong half.

Currently CSIRO, and a limited number of others advise the Murray Darling Basin Commission. The Commission asks for submissions and uses CSIRO to vet the applications. CSIRO is also a recipient of these funds, funds that due to the organization's requirements to seek up to 60% of their total funding are critical to CSIRO survival. This is an invidious situation for CSIRO who are forced into serious conflict. Our once great scientific icon may inadvertently be corrupted, and could rapidly lose its scientific edge – they may be reduced to solving today's problems, not next years or the next centuries which was their intended brief. Very pertinent comment by the Chief Scientist Dr Robyn Batterham was made to the NSW Legislative Assembly on disincentives to collaboration faced by CSIRO in its current operational mode, and the Standing Committee is encouraged to read the references cited below[1],[2]

We pay the notion that Salinity is the greatest environmental threat we face. We also look to invest in the business of its remediation, yet we are scientifically not on firm ground. The causes of salinity are complex, and although the rising water table model may be the answer in certain areas, and the source of the salt cyclical salts, these ideas are not universally applicable.

More tragic is the fact that the Scientific community is steadily entrenching itself in what are waring camps and the chances of collaboration are shrinking when they should be expanding. At present it can be said that there are two main groups and one minor group between.

1. Those who adhere to orthodox models of water table rises, aeolian and other cyclic salts – the surfical camp

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[1] Batterham, Review of the External Earnings Targets Policy Applying to CSIRO, ANSTO and AIMS 2002

[2] NSW Legislative Assembly. Select Committee on Salinity Final Report December 2002. Report No 8.

2. Those who contend that salt has many inputs, including connate salt (salt in ancient sediments) and salt from rock weathering – the whole earth camp.

3. The minor party are those who accept the tenants of Camp 1, but add the fact that inland salt comes from water in faults (vertical fractured rock aquifers).

None of these camps can claim a mortgage on the truth. We have to find a way of proving the various claims, rejecting the false or irrelevant, and constructing a soundly based foundation on which good policy can be grounded. We contend that every area will be unique with respect to cause and effect, and further, some salinity is inevitable – the process is part of the rock cycle combined with desertification. Humans play a role in this process, but in some cases it is minor; in others it is major. We must be able to recognise where our efforts will succeed, and where they may fail. This surely is the basis of any investment strategy.

All scientists decry the lack of funding in basic science, that is, researching the fundaments. We need more funds into the fundamentals, but it is not only the amount of funding that is the problem; it is the effective application of funds. If government departments, specifically DLWC in NSW, have to seek research funds to bolster their need for recurrent expenses, then the research is not done. If CSIRO has to seek funds for the same purpose then again the effect is the same, the work is not done. CSIRO has become both the poacher and the gamekeeper in the Murray Darling, and this is not a situation that allows diversity of opinion. We have got to the point where in the minds of media commentators anyone who questions the conventional wisdom is very suspect, and therefore not competent. We hear the same comments about the Greenhouse problem. That is not the way science works. We must all be very, very sceptical and open to all reasonable ideas.

I respectfully suggest to the Committee that an Australian Salinity Research Program be set up, perhaps on the lines of ARC or similar Industry based research granting groups such as the Australian Coal Association Research Program (ACARP). This new organization should be charged with seeking, assessing and then distributing the funds channelled into this problem. There are many models for such a unit; find the best. Let CSIRO be CSIRO, and remove its conflicts. The Murray Darling Basin Commission and other authorities need a broader base for advice.

I thank the Committee for the opportunity to express these views. We are seeking solutions to the problems that will allow managers to set in place effective management, and policy makers realise policies that can succeed.

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