

It'll make you shiver.
It'll make you sweat.

it's the S.R.C.
CHIMEARA.
— 8:79

inside: memoirs of a president
· confessions of the women's officer
· health hazards for artists

Plus an interview with XTC

EXTRA EXTRA EXTRA EXTRA EXTRA EXTRA EXTRA EXTRA

on being

the EDITOR.....

Read all about it!



This is the office whose holder is the most conspicuous and accessible person on the SRC. Every duty which the Media Officer, otherwise known as the Editor, performs becomes apparent to the student body in the form of a newspaper. Other officers, such as the President, the Secretary, the Treasurer and so on devote just as much time and energy to their respective positions and their ensuing duties.

However, because their work is largely administrative, Joe Blow student does not have any concrete evidence before him that these people do anything besides carry a bureaucratic load, unless of course Joe decides to investigate and find out for himself exactly what his boss does.

Since the Media Officer is always in the public eye, he/she is answerable to two entities: the general student body and the Student's Representative Council. The SRC sees the role of the Media Officer as the operator of the publicity machine. It is the SRC's policy to produce a newspaper which reflects its ideals and hopefully provides food for thought and presents an alternative to the publications already available to us, such as the daily newspapers, glossy magazines, etc.

As Media Officers this year, Brent and I have also had a responsibility to the general student body. Consequently we have always printed without censorship, any material which has been presented to us, provided we have had the space available for it.

Generally speaking, all the material which we have received has been very sensible and we have gratefully accepted all contributions. Perhaps the new SRC will lay down hard and fast editorial guidelines, who knows.

Contrary to popular belief, the editor (of a student paper) does not just edit.

Firstly the material must be collected. Some students hand their literary gems in to the secretary, however, there is a less conscientious strain of contributor that makes wild and rash promises when you plead with them and are usually not seen for several months ensuing, as they devote all their time studiously avoiding you. Then there is the well-meaning plodder who will get there eventually with constant nagging, or should I say persuasion, from the Eds, and when their coffee-stained, crumpled-up scrawl finally finds its way into your hands you have to fill in the missing sentences/paragraphs, using your own imagination. Yes it is a very creative job to have, especially come layout time when you have all sorts of peculiar holes to fill in with arty graphics and appropriate illustrations.

Media Press handles both the typesetting and printing for us. I feel it only fair to give them credit for creativity as well. Sometimes they come up with some very imaginative typesetting work, which provides us with hours of entertaining proof-reading!

Layout is perhaps the most time consuming aspect of putting a paper together. The type has to be entered in a fashion somewhat akin to doing a jig saw puzzle. It all has to fit into place and ultimately make sense. The lay-out process can take anywhere from three hours to three days to three weeks.

Once the art-work and type have been arranged, the page numbers have to be worked out, and the photos have to be scaled up or down for bromiding, then it's ready to have printed.

From there it's only a short wait to see the whole thing compressed into the final product, and it's a pretty satisfying feeling, when you finally have a finished copy in your hands.

— JUDI DRANSFIELD

EXTRA EXTRA EXTRA EXTRA EXTRA EXTRA EXTRA EXTRA

the SRC secretary SPEAKS

Well, I'm the SRC Secretary. This gives me the responsibility for organising elections, understanding the SRC constitution and its implications, both legal and otherwise, understanding policies, organising correspondence to and from the SRC, and drafting outward letters. Lastly, I have to liaise with committees and other bodies who deal with the SRC.

These things have been achieved because people involved have been motivated and done hard work to achieve their aims. What we need now is new people, particularly from first and second years to become involved and motivated to use the SRC funds (which will be in excess of \$45,000 next year) to achieve things for the student body at large.

If you have ideas, are prepared to do some work, join the SRC, or at least discuss what is involved with anyone in the office — otherwise the days of the "Great Mackin Apathy" will be with us again.

— GUY MORGAN

THIS ISSUE was put together by the S.R.C. Those involved: Julie Moran, Fiona Buckland, Craig Wilcox, Judi Dransfield + contributors

Many students in our year display marvellous concern, particularly with their own individual progress. Let's not be under the misconception that individually we are important, because we're not. As a group we are quality standard, nearly off the line (something similar to a clothes line), haven't been given defect notices, haven't really been given anything. Concern, now that we have completed our extended practice teaching, is neither shown by lecturers nor students. "Why should we worry? We are nearly finished." All sorts of concerted remarks, and more, display a real concern for future art teachers, the quality of education given to us, then eventually given by us, and most importantly concern for the kids whom we will be "educating."

who cares?

At some point in our lives we have attempted secondary education. Most of us being students, or school pupils. Some even discovered Art. Others such as the B.Ed 4th year discovered Art Teaching. For the first time in a long while we returned to secondary schools as givers of knowledge (in fact as teachers, student teachers).

"Extended Practice Teaching," an innovative programme designed by education lecturers (as it said in the brochures), provides an opportunity for students to apply their three years of knowledge gained at the education campus. Yes folks, products for the 80's! Fourth year students in this programme, being the new breed of teacher with a degree, have been manipulated into a "wonderful" factory type model. Education for us is "consume, be silent." We have become that which we thought we wouldn't. Education students.

Elitism in Art Education, for many of us, is a "real thing." "Yes, Bob — or Peter, or George — how many words was the essay?" The boys on the tower of power. Education or indoctrination? Don't answer, it may hamper your progress into next semester. Surely with the power structure in art education, as it is, all of us must react. An air of elitism exists in our art community as well. As teachers we should consider creating an awareness of art as a total experience. Concern should then be directed towards art education as a whole process, creating an understanding for those we teach. We must act not only individually, but as a group. Concern should then be directed towards art education as a whole process, creating an understanding for those we teach. We must act not only individually, but as a group. Concern for those broader issues, as a group, will in turn benefit the individual.

— BILL KENSELL

2 I think I can say that over the last few years the overall administration and organisation of the SRC and its office have improved considerably. The shop at Flinders Street has been set up and the office moved to the same campus, re-organised and supplied with necessary equipment.

A lot has been achieved by the SRC as the policy emphasis has switched from social occasions to services and "structures" that help us to help you. When one considers that the SRC in its first few years of operation in the CAR spent around \$150,000 on social functions and other activities without setting up any services or functions, it makes the money spent in the recent few years well worthwhile, with billiard tables, drink machines, the shops and the publications to be easily seen. A brief summary of what has been done follows this report.

In 1976 the fourth floor in Cumberland Street was open studio space and the hub of all the first year students. Fortnightly meetings of this year were held with the programme directors and organizers. Students' ideas, questions and problems relating to the course were raised at these meetings. It was a nice bandaid. The four-year Dip. Art course is now nonexistent, along with the educational principles it was set up with, thanks to the Fraser Government.

One of the issues constantly discussed in these meetings was art materials — how to carry out an art course of 11 hours a week professional studies with lecturers, four hours of humanities, plus that mythical 20 hours required studio time carried out by the student outside lecturer contact time on \$42 TEAS a week. Forty-two dollars if you were one of the lucky 41% to receive full TEAS.

One solution was to set up an art materials co-op, every student to pay a membership fee which provided the capital to buy then sell at wholesale prices back to the student etc. At the same time as this, a few art students, eg. Richard McDermott, had been co-opted into the SRC through their infamous electoral system. They set up elections to establish a new Art Committee which operates as a committee of the SRC (Students' Representative Council). The SRC is funded by the students' fees of \$35 per head per year allocated to their various committees.



MEMORIES

of my involvement in the spiries history of the SRC.



1976

Richard McDermott canvassed students to stand for election onto the Arts Committee. I was one of those students. There were four first year students on this newly formed Art Committee. Ruth Waller was elected president of it and we met in her flat in Burton Street above the Caps restaurant.

The first-year block wanted \$1,500 of the \$4,387 set aside by the SRC for the Art Committee after successful fighting by Polly McCallum and Richard McDermott. The Art Committee drew up its budget and submitted it to the SRC then went about carrying it out over the next six months. However, the big ballup happened now. When we asked for the money, the SRC said that it had spent or re-allocated our money — we were never very sure, being such innocents in the administration of such things.

By this time the 16 member Art Committee had dwindled down to six people meeting on the fifth floor at Cumberland Street weekly. It was decided that the only open avenue was to get elected on to the SRC. This seemed a big mysterious step. We found out that if you nominated to be on the SRC, you were virtually guaranteed to be elected unopposed.

1977

I became an SRC member in September 1976, to find that I was outnumbered by education students — those dreaded Albion Avenue species — by about five to one. When the budget session came up, I enlisted the support of Garry Traynor, whose arm was still sore from being asked to be on the Art Committee. Along with Garry Lester, who was activities officer that year, we fought for a distribution of money to the committees of the SRC (Art, Primary, Science, Social Science and Music) on a per capita basis.

That year I volunteered to be the Media Officer as well with ideas of getting a student newspaper under way. Up till then, there existed a newsletter called "Bug," which was in the same format as our newsletter "Mackievillian News." The first issue of "Chimaera" came out in July 1977. I chose the name "Chimaera" as it meant chaotic thought, a hopeless ideal, unreal conception, which seemed to reflect the state of the College. The first edition was seen by the Art School, but the Albion Avenue allocation disappeared through the work of some wowsler, as the graphics in this issue were not fit to be published in a christian newspaper.

1976 May
Art committee member
1976 Sept
SRC representative
Media Officer
1977 Sept
SRC Treasurer
Media Officer
1978 Sept
Student member of college council
President of SRC
1979
President of SRC
1979 Sept
resign

1978

Meanwhile the Art Committee continues funding weekly films at Cumberland Street, students exhibitions and the establishment of the art shop to the tune of \$5,000 over two years.

As Media Officer, I organised people to write articles which Steve Smith and myself laid out. We brought out two more issues that year (1977) and five the following year. In 1978 some of the issues were given over to other groups of people which is still the policy now. Any group of students can apply to the SRC's Media Officers, Judi Dransfield and Brent Legge, to take over the publish an issue.

In 1978 I was Treasurer and Media Officer of the SRC. Garry Traynor joined the SRC for this term and was President as well. Nothing like a star rocket career on the SRC. Garry and I had been co-presidents of the Art Committee through 1977 and as such, realised the capital and back-up needed to establish an art shop. In 1977 we held art material sales. We would buy \$1,500 worth of art materials covering most courses, then sell them at half price in a day in the Cumberland Street foyer. With the \$750 cash we would buy more to sell and so on until there was no money left. This gave immediate benefit to the students but not to all students and certainly it was very short-lived, so to say.

With control of the SRC we were able to allocate money on a proportional representational basis, with this allocation being adhered to. Major priorities were shifted. Barbecues and alcohol, which were the favourite expenditure areas of the 1975 and 1976 SRCs, were limited to a maximum of \$6,000 a year. This entertainment budget included concerts, dances, performances etc. Garry Lester administered this with a fresh wind — instead of fortnightly steaks and beers, there were dance companies, lunchtime concerts, guest speakers, eg. poets, and student performances (eg. Too Old to Rock & Roll and Too Young to Die).

Student facilities were upgraded as best we could. Coffee machines and cold drinks, r/c phones, the pool table, were bought and/or organised. A relationship with the College administration was established. This has proved most helpful as they assist us in many ways — eg. allocation of space for the shops at Flinders and Cumberland Streets, and furnishings for these. The pink borrowing cards, enabling students to borrow from two places or retain their ID card for discount purposes, was Garry's idea which the College adopted. The present student facilities, especially at Cumberland Street, are very inadequate. This situation won't be improved space-wise until the Albion Avenue campus opens up, where canteen, limited sporting facilities and an art shop will be operating plus outside space.

Exhibition space for students is a story in itself. Garry and I spent weeks looking for space to rent, in which students could exhibit work, put performances on etc. Then Ken Reinhard told us of this marvellous grant the College received to set up a students' gallery — hence the Ivan Dougherty Gallery which is represented to the Higher Education Board as a students' gallery for student work. Well, we know about that line, but though the gallery as it is now is very beneficial to students, this stopped us proceeding with an outside student space — perhaps that is something to be taken up again. The Art Committee this year helped fund the exhibition of 13 students at IDG during the summer break when no students are around.

There have been no major changes to the distribution of money within the SRC since, except perhaps setting aside \$5,000 to buy some land outside Sydney. This could be scrapped now with the demands on money to set up the Oatley campus next year and the Albion Avenue campus also.

In 1977 the College signed our cheques and did our accounting for us — now we have autonomy over this with two people on the executive sign cheques and the Treasurer doing the books. The College gives us access to their internal auditor, and we will be appointing an external auditor soon.

Student fees will be raised this year after keeping at the \$35 mark for three years. This increase will cover the wages of a part-time secretary for Oatley with the parallel increases in costs of operating another campus.

The interest taken in our national student union has also increased dramatically over the last two years, with full attendance of student representatives at AUS Annual Councils and Special Councils. We have held many regional conferences at Mackie with the co-operation of the College. AUS has as its main aim the care of students in regard to their education and welfare. We have found that being a member of AUS has been extremely beneficial in these areas. Meeting other students involved in their student unions has provided information and support in our activities.

This year everybody on the SRC executive, except one, is leaving College, so we are campaigning for new people — it's about time we were taken over!



THE CONSERVATIVE BACKLASH HITS EDUCATION

As everyone knows, we are living in the reactionary 1970s, and the progress made in the area of education a few years ago is rapidly being eroded away.

Aspects of the new wave of conservatism under the present government and economic and political climate which are particularly disturbing are:

- 1) The threat of reintroduction of tertiary fees and a "user pays" education system — once more limiting access to decent education to the rich.
- 2) The success of right-wing lobbyists such as the Festival of Light, and Rona Joyner's bible-bashing organizations in Queensland, in their effort to prevent schoolchildren having any access to alternative information in the curriculum.

The conservative campaign is directly related to the economic depression now. The interests of those in power are best served if education is blamed for the escalating unemployment rather than the rotting hulk of the capitalist industrial structure.

- 3) Cutbacks in funding to government schools, accompanied by an increase in funds to the private sector of education — we all know whose education the Fraser government is interested in supporting.

The Williams Committee Inquiry into Education provides a basis for the reintroduction of the tertiary fees, as well as the scrapping of the TEAS scheme and the introduction of loans. Such a system would drive poor students out of universities, CAEs and TAFE and would further restrict people's access to tertiary education. Such a system would specifically adversely affect women students.

WOMEN AND FEES:

A study from the University of NSW shows that women students would have been significantly more likely than male students to defer or not enrol if tuition fees had been charged. And there are some groups of women students whose access to further education would have been even more restricted:

- Older students would have been more likely to defer had fees been reintroduced.
- Students whose parents worked in low income and low status occupations would be more likely not to study.

WHY WOULD WOMEN BE LESS LIKELY TO STUDY?

Fundamentally, our society still believes that it is less desirable for a woman to obtain an education than it is for a man to do so — a function of sexism. (Sexism refers to the power relationship men have over women because society is run by men and benefits men.)

If tertiary fees are reintroduced, most women would be disadvantaged: young women straight from school would be less likely to commence tertiary education because their education is seen by some families as being less important than their brothers'. OK, the family are prepared to pay some money towards her education, but she is channelled into areas such as Humanities which will have lower fees than courses like Medicine, Engineering or Law.

Mature age students would also be less likely to commence/resume tertiary education because they are denied equal educational rights. The reasons would be something like this:

- If married and economically dependent, would not be "allowed" (by the husband) if to do so involved paying out money.
- Would feel that it is somehow "irresponsible" to spend money on her own education rather than that of her children.
- Would simply not have enough money to finance her education.

Part-time jobs (scarce and mostly without study leave), shoplifting and prostitution are common ways for women students to support themselves.

The threat of the reintroduction of tertiary fees is thus quite deliberately aiming a blow at the concept of "education for all" and is a conscious attempt to restrict access to tertiary education to the minority group who have traditionally benefited from it — white, anglo-saxon, middle-class males.

AND MEANWHILE, BACK IN BANANALAND . . .

Although there are many among us who firmly believe that Queensland should be towed out to sea and sunk, scrutiny of some current happenings in the Queensland school system may prove quite enlightening, especially when you realize that events in Queensland are paralleled in NSW and Victoria, to name only two instances.

Rona Joyner and her right-wing, Christian fundamentalist bible-bashing lobby groups in Queensland are very successfully representing the interests of the employers. Their blatant heterosexism and racism would seem to belong to an obscure Holy Roller movement, but God-bothering Joyner is far more powerful and politically influential than would seem logical. She has massive support from the "traditional conservative, agrarian, fundamentalist population in rural Australia," and one can presume an "indirect" link to Joh and the National Party and the employer groups.

She has certainly not been ineffective. She has stopped the progressive MACOS (Man - A Course of Study) in its tracks. The blue-ribbon LILAC set (Ladies in Line Against Communism) congratulated the government for its ban on the course. The Queensland government seems prepared to tolerate God's eccentricities for the political and economic gain it sees in him.

Educationally, it is terrifying —

"The same Holy Spirit who teaches adults who teaches children. The scriptural method of educating children is learning from the examples of history, especially Bible History." So much for discovery methods, individual programming, remediation and anything at all — with God, you don't need it. And forget about teaching kids to analyze anything, far less criticize.

WHO IS RONA JOYNER? WHY DOES SHE WANT TO S.T.O.P. EVOLUTION?

I am opposed to evolution being taught in Primary Schools because it is unproven and unscientific and contrary to the teaching of the Bible.

That's a quote from her organization — Society to Outlaw Pornography (STOP) and Campaign Against Regressive Education (CARE).

Her attitudes and ideas (extreme and eccentric though they are) are a convenient excuse for the decline in the Queensland government has made on educational courses.

The course "Study of Society" (SOS) has now been banned from schools throughout the state. SOS was third in line of targets after MACOS and SEMP (the

Social and Educational Materials Project) and represents yet another unnerving victory for Mrs Joyner and her supporters in the Queensland cabinet. She has claimed that this is just the beginning — courses that are humanist are dangerous and therefore "subversive."

The banning of SOS did not attract the sensational publicity surrounding the decision to ban SEMP and MASOC, but it should have. Simply because it is NOT a controversial course like the other two, and had been in use in schools for some time, it should have brought the conservative campaigners under scrutiny. This course re-oriented, for example, the teaching of history from the studies of the English monarchy to more general Australian and South East Asian history. These outmoded teaching systems are now to be reintroduced — something which most Queensland teachers are not very happy about. However, in Bananaland, teachers critical of the government's decisions risk harassment, and the loss of their jobs.

MORE OF MRS JOYNER'S RECOMMENDATIONS

- Social workers should not be appointed to schools and thus usurp the role of the family and church.
- I believe in children being instructed in absolutes. Therefore I cannot agree with value clarification, simulation games, moral dilemmas, or any other forms of social engineering.
- Homosexuals and drug users and other law breakers should not be allowed to present their "alternative" life-styles to the students.
- Under the Education Act, Bible teaching is provided for, and it must be made clear that "religious instruction" refers only to Christian religious teaching. (1)
- rote learning and a sound knowledge of basics gives all children a good chance of reaching their potential.
- I object to school libraries containing books giving details of human sexuality because this is a matter to be handled by parents in their own way.

etc., etc., ad nauseam . . .

All these gems of educational wisdom come from a kit which Mrs Joyner distributes to her supporters if any wish to put a submission to the Queensland government's enquiry into education — a kit which gives you Queensland cabinet's model for future education.

And should you be tempted to dismiss all this as laughable, excesses of bible-bashing in Bjelke-land, here is some information on the same phenomenon occurring closer to home.



- In Victoria, the Education Minister has requested the withdrawal of the booklet "Young, Gay and Proud" ie he is trying to prevent any sort of

- positive self-image of gay kids with gay adults.
- In the last NSW election, a major part of the Liberal platform was their intended education reforms, which included the banning of SEMP and MACOS, the notorious, dangerous, subversive, humanist social science curricula. Their reasons — these represent a threat to the Judeo-Christian ethic and the supremacy of the Family, two of the things on which this society is (with such unfortunate results) founded. The Liberals lost the election, but they and their supporters (including groups such as the Festival of Light) wield a great deal of power and represent very successful conservative lobby groups, who can achieve results such as this: The "Combat Sexism Kit" a resource for use in schools, was produced by AUS a couple of years ago and has been used successfully in many schools. Not so long ago these kits were subject for discussion at a Right to Life rally. When a journalist spoke to Fred Nile, he said that the Right to Life had been lobbying the Labor government and had got a guarantee in letter form stating that the Minister for Education, Eric Bedford, had asked that the kit be withdrawn from schools. The kits are now apparently "under investigation" — another successful attempt to prevent alternative information reaching schoolkids.

Yet another aspect of the conservative backlash is the increasing witchhunt against homosexual and lesbian teachers, particularly in Queensland where teachers are supposed to be of a high "moral" fibre (ie.

straight and middle class). The belief that only heterosexuals are suitable teachers seems to stem from some mistaken belief that all homosexuals are child molesters. (In fact statistics show that the average child molester is a married man aged 31 and his average victims is his daughter!)

These attacks on homosexuals are also based on the Judeo-Christian belief in the supremacy of the Family as the basis of society. In fact, this victimization of homosexuals and lesbians is based solely on discriminating against any alternative forms of sexuality, and is thus just a part of the entire range of conservative responses to progress in education.

Apart from aspects of teacher employment criteria and the structure of the curricula, the Right has created a phony discipline crisis. Kids are getting worse, that's why they can't get jobs. Radical education is the cause — back to the Three R's. But a literate population is precisely what the Right can't afford to have, so the demand is not backed up by educational spending to ensure that some poor kid with learning difficulties gets to learn to read. It's better to bring him so far into line that he doesn't notice he can't read. Discipline will solve all. It keeps teachers in line, it keeps kids in line, and teachers and kids are to blame for youth unemployment. Or so the line goes.

Luise Guest
Women's Officer

the tres.

The Treasurer is responsible for the financial affairs of the student union. The job can be broken down into four main areas:

Firstly, the listing of all income and expenditure that the union is involved

- preparation of our own financial statements to be tabled at the SRC meetings;
- and, most importantly, the general overseeing of the student funds.

Don't be turned off by this boring regime of the job as it can be interesting and worthwhile if you are prepared to become involved.

— Peter Thrussell.

COLLECTIVE COMICS



... heterosexual women don't understand how heterosexuality maintains male supremacy. They also don't want to understand because if they did then they would have to change their lives and lose the scant privileges men have given them. The facts are simple: heterosexuality keeps women separated from each other. Heterosexuality ties each woman to a man. Heterosexuality exhausts women because they struggle with their man — to get him to stop oppressing them — leaving them little energy for anything else. For the destruction of women's communities, for the betrayal of other women, women indeed get privileges from men: legitimacy (you are a real woman if you are with a man) — a sexual definition again, prestige, money, social acceptance, etc.

Rita Mae Brown

DOING NEW COMICS?



WHAT have you got to lose?



If your possessions were lost or stolen, could you afford to replace them? You probably couldn't, that's why AUS insurance designed Gradplan for students and graduates.

Gradplan — covers your household contents and personal effects, both in and away from your normal place of residence and/or your residential building. Premiums vary from state to state and are available with brochures

Advisory Service: we offer a complete, free advisory service on all aspects of insurance, including health and life insurance. For all your insurance queries, pick up a brochure at the Student Association/Union/Guild or write to AUS Insurance, 1A Lee Street, Railway Square, Sydney 2000.

"REARRANGING THE DECK CHAIRS ON THE TITANIC"



ON BEING WOMENS OFFICER

For almost two years now I've had the dubious distinction of being Women's Officer for the SRC at Mackie.

Despite the fact that it's obviously very important to have a feminist working with the SRC's financial support for women on campus, often the position of women's officer seems very much a token gesture towards women — "Oh yeah, we don't have to think about women (course discrimination/myriad forms of sexism on campus/lack of child care facilities, etc. etc.) because we've got a women's officer to do it for us." This lack of real committed support makes it very hard for the Women's Officer to be very effective, and it's notoriously difficult to do anything at Mackie because the students are so fucking unpoliticized.

However, hoping that there are a few feminists out there (who may be interested in organizing with women on campus) I'll explain how things COULD work if we got it all together.

WORKING WITH THE SRC...

(i) The Women's Officer is an SRC position, which means that you are responsible for working with the SRC. The good thing about this structure is that it means that you are not acting in isolation — the SRC will back you up, financially and otherwise. It also means that you can have an effect on the policy of Mackie's Student Union. That's not entirely insignificant. It means that the SRC which collects fees from all the women students at this college has strong policies on issues which affect us. For example, your SRC is now committed to supporting fees, safe abortion on demand, whereas previously it had no policy on abortion or any other women's health care issues.

campus to have women's rooms where we can get away when it all gets too much for us — the possibilities are endless once women really get organized.

Last semester we organised a bookstall with a selection of books from the Feminist Bookshop to coincide with a lunchtime performance by Women Action Theatre. You can also organize lunchtime speakers (and guest lectures if your regular lecturers are willing) — the Women's Collective is compiling a list of women who can lecture on topics like 'The History of Women in the Visual Arts'. Again, last semester we organized for Kanna Veal, the AUS National Women's Officer, to come and speak one lunchtime about why AUS is so important for women students.

AUS - A NATIONAL STUDENT UNION...

(ii) It's important for Women's Officers/Women's Collectives to be involved with AUS, our National Student Union, because of the AUS Women's Department which has always been vocally committed to feminist policy and campaigns, and very visible on a campus level through all kinds of resource materials — posters, badges, stickers, booklets on sexuality, abortion, rape, sexism in education etc. The educational research that AUS funds is also vital for women, particularly in the area of what the reproduction of tertiary fees would mean for women's access to further education.

It's brilliant when you discover this support from the Union, because it's so easy to feel disheartened by the difficulty of the task (sometimes I feel it's like pushing shit uphill) and isolated from other women. The Women's Department is a national network of communication between women on different campuses. Look around Flinders Street common room or Albion Avenue and you'll see plenty of AUS posters, stickers and publications.

considered "normal," is the nuclear family, the corner stone of capitalism and women's oppression! Being shy or a poofy threatens this entire structure, especially when you refuse to hide in a closet.

That's why lesbians and gay men are oppressed — rejecting heterosexism is a big threat to the status quo. And AUS recognises that lesbian and homosexual students are oppressed in many ways, not least the very real prospect of job discrimination — and that refers particularly to all you teacher trainees!



Mackie's SRC also has policy specifically supporting politicized lesbians and male homosexuals in their struggle against oppression.

So remember that we are committed to supporting you if you find you're facing discrimination of any kind at college.

PUSHING SHIT UPHILL

At times the structure and administration of an institution like Mackie seems like a huge monument to the patriarchy, and the sexist and heterosexist shit that we women put up with every day gets harder and harder to cope with... so don't cope with it, fight it! People on their own are in no position to fight anything — they have to be organized politically. The opportunities for change are there, but the fewer of us there are, the harder it is.



STARTING A WOMEN'S GROUP

(iii) The most important step is trying to start a Women's Group in order to find out what women are thinking/doing/talking about. This is hard because a lot of people who have no idea of how feminism operates, how it underlines the powerless position of women in this society, are very suspicious of and threatened by the idea of women meeting to organize themselves.



They frequently describe us as sexist, which is ridiculous — women organizing together to fight sexism are NOT being sexist. In fact, women can't properly describe as sexist at all because sexism depends on power, and in this society we have no power.

When women are organized into a group they can really start doing things — organizing women's issues of the student paper/women's exhibitions, showing women's movies/lobbying the college administration with our demands/organizing space on

Unfortunately, due to right-wing attacks on the Union, and anti-Union legislation by various State governments, AUS is in pretty dire financial straits and although the Women's Department is the highest priority of the Union after Education, there isn't much money for campaigns, posters, etc.

However, AUS also operates (perhaps most importantly), on a regional level, through Regional Organizers, as does the Women's Department. There are Regional Women's Organizers in each State who are responsible for communication between women on different campuses, and organizing on a State level (basically doing the shit work). The Regional Women's Policy Collective which consists of interested women students from all over NSW makes decisions about priorities, policies and campaigns that we want to work on. It's quite easy to become involved on this level — you just find out where and when the next RWPC is being held and come along.

DYKES & POOFERS...

(iv) A particularly good feature of the AUS Women's Department is their consistent support for homosexuals and lesbians in their struggle against oppression. This comes out of a recognition that sexuality is not just a bedroom issue. Becoming a lesbian or homosexual is a political decision, just as demanding the right to have an abortion is a political decision. Making these decisions is not easy, because society has one model of sexuality which is



Watch Out!



for the next Womens' Collective Meeting...

Watch Out!



WHAT'S HAPPENED TO AUS

AUS has become quite radically different in structure after a Special Council held in Melbourne recently. Special Council, a meeting of delegations from each member campus of AUS, took place in two sessions on June 23/24 and July 14/15. The delegates from Mackie who attended were Jude McBean, Garry Traynor, George Craglietto, Shauna White and Luise Guest. The important changes made to the Union have to be ratified by on-campus votes all over Australia before they can come into effect.

WHY DID CHANGE BECOME NECESSARY/RIGHT WING AND CENTRE-UNITY ATTACK AUS?

In the present political climate of extreme conservatism, it perhaps became inevitable that right-wing elements within the Union forced AUS into a financial position where it was no longer possible not to give a certain amount of ground and concede to structural changes.

Admittedly there has been a certain amount of legitimate dissatisfaction with AUS on campus, but groups such as the Australian Liberal Students Federation (through lobbying State and Federal governments to bring in anti-Student Union legislation) and Centre Unity (basically right-wing ALP students) manipulated this dissatisfaction through initiating secessions on many campuses, and forced AUS into an intolerable financial position through what amounts to sheer blackmail. By April this year AUS had lost 25% of its membership through Centre-Unity initiated secessions, and regional organizers were forced to spend all their time fighting secessions on different campuses instead of getting on with the real work of the Union, like fighting moves to reintroduce tertiary fees. This by Special Council we were forced to debate structural changes to the Union, eg. the main grievance of Centre Unity — the so-called "gerrymander" in favour of small campuses, which the pro-secessionists used to great effect in secession debates at UNSW and Macquarie.

WHAT CHANGES WERE MADE AT COUNCIL?

(1) VOTING STRUCTURE:

This represents the most radical change. National Councils of AUS will in future operate with a "one student/one vote" system. This means, in effect, that the traditional weighting towards small campuses (which meant that the votes of campuses like Mackie were not totally outweighed by monstrous campuses like UNSW and Sydney Uni) had been drastically cut.

The total votes will equal seven times the number of campuses within AUS. However, small campuses will still have a voice in the Union because —

- a) the present system which gives a high weighting to small campuses will continue to apply for regional conferences.
- b) as a trade-off for losing extra votes, small campuses will receive 5% of the AUS budget to form a "Small Campus Committee". Small campuses (under 3,500 students and/or isolated in country areas) have special needs that AUS has traditionally met and will continue to meet.
- (2) Regional Organizers will be directly elected.
- (3) The National Executive has been enlarged, and will be elected by proportional representation from Annual

Council. Each state will be guaranteed representation by the non-voting attendance of Regional Organizers at Executive Meetings.

- (4) Discussion at Annual Council will be more limited and linked to action motions (rather than abstract policy motions). This means that AUS business will be more restricted to campus issues — a further attempt to conservatize AUS.
- (5) There are two new members of AUS — Hartley CAE, South Australia, and Sydney College of the Arts.

The structural changes to the Union outlined above must be ratified by AUS's member campuses before they can come into effect.

So much for structure!

NEW POLICY

- (1) Council passed motions affirming the right of students alone to make the decisions concerning student unionism. This follows a spate of actual and threatened government legislation in various States (notable Western Australia and ACT) attempting to prevent campuses affiliating with the National Union.
- (2) In response to the suggestions of reintroducing tertiary fees and a "loans" scheme embodied in the Williams Report into Education, the "user pays" approach to education was rejected by Council, recognising that this perpetuates and increases the elitism already operating in education — effectively restricting access to tertiary education to the predominantly white, middle class, anglo-saxon male students who have always reaped the benefits of it.

BUDGET

This year, and specifically Special Council's Finance Session, has been severe cuts to AUS finances. Only \$80,000 of disposable income was left to be spent by the Special Council. A poll was taken to determine the priority of areas of expenditure. The result of this poll was (in order):

- Education
- Women's Department
- NSW funds
- President
- Asian Students Association (who rely entirely on AUS for support)

Amendments were passed to allow funding for all regions (States) but Regional Organizers will have to be re-elected.

The Education Department will continue with the Education Vice-President Mark Barford, Trainee Teacher Organizer Anne Goolley, and Education Research Officer Simon Marginson fully funded. Limited back-up funds will allow material produced by them to reach campus.

The worst aspect of the budget is that there will be little or no campaign funds for either Education or the Women's Department, severely limiting the function of those departments.

The Black Community School in Brisbane, which like ASA relies on AUS for money, received a reduced donation. After which allocations there was no more money left.

The budget session of Special Council came to an end at 5.30 on the Monday morning, after which most delegates left extremely depressed about the future of the Union.

However, more money is expected to come into AUS (from previously unpaid fees) and the necessity now is for issues (education issues, women's issues) to be fought openly on campus, to involve all students and the future of their national Union.

Luise Guest
Women's Officer



Photos of Mackee
political hacks
taken by themselves -
(cant you tell...)



ANDY

Andy Partridge and Colin Moulding from the British band XTC chat with Judi Dransfield and Paul White at a Pyrmont pub.

PAUL: I find it hard hearing "Beat Town" first.

ANDY: Doesn't ^{he?} You've got to start with something. You start the morning with a cough you know, whatever.

PAUL: I'd like to hear my favourite song first.

JUDI: What is your favourite song?

PAUL: "Life Begins at the Hop" is my favourite at the moment.

Leads from Festival, enters and offers various treats from his "Talking Menu." Andy opts for ham steak and pineapple, and Colin has a pie, which he later declares is not up to the standard of English pies.

ANDY: I don't think we've been playing "Life Begins at the Hop" very well — we've got to find it. It's like "This is pop" was messy for ages.

PAUL: Do you get sick of playing it?

ANDY: No, because then you feel good when you finally learn to play it. I still find a bit uncomfortable with "Life ~~at the Hop~~" at the Hop. It still has to get together. All these songs are like jellies you have to give them time to set. Then, when they set, you can destroy them by eating them.

PAUL: What have you been eating while you're here?

COLIN: Anything I can get my hands on, really.

PAUL: Do you like the beer?

COLIN: Yeah, it's great.

PAUL: Do you like London?

COLIN: Yeah.

JUDI: Do you like any bands in London?

ANDY: Not really. No, I don't like bands much. You get wrapped up in what you're doing yourself. It becomes a bit incestuous, going to see other bands. I know the tricks and I know the mistakes. It's like going to see somebody else's crowd. It's not one infantile as (sings).

PAUL: Do you like any other bands, Colin?

COLIN: Not really, no. If I wasn't a musician I might be getting off on other bands a bit more.

ANDY: I like a lot of things, but I don't like doing music when I'm not doing music. At the moment I spend most of my time crouched over little 25mm metal figures from the American Civil War painting them up in ludicrous details, for some reason or other.



PAUL: Do you have a hobby Colin?

COLIN: Not really, no. I like maps.

ANDY: I'm really getting into war games in a big way.

JUDI: Why do you think you're fascinated with war games?

ANDY: I've no idea. You could palm it off and say it's because I'm a Scorpio.

PAUL: Ooh, sex wars. That's what Scorpios are known for.

JUDI: What's that got to do with war?

ANDY: Sex, war and death.

JUDI: Sex is aggressive?

ANDY: It's the creative and destructive spectrum. Sex is creative and war is destructive. They are at both ends of the spectrum.

JUDI: Have you been happy with the press coverage you've received so far?

ANDY: Couldn't be happier. They've gone absolutely over the top with it.

COLIN: We were told that it's the ultimate press.

JUDI: Yes, that's certainly true of the music press. What about your mass-circulation media? What about the Sun's quote where you said that you thought your lyrics were meaningless?

ANDY: The lyrics are meaningless — to anybody else. Lyrics sound good — they don't necessarily have to mean anything. You can have good sounding words. I like to write passages where you just sit and turn the tap on inside and that's what sort of a song you'll write. Some of them mean something to me, but they may not mean anything to anyone else.

JUDI: What are your impressions of Australians?

ANDY: Loud — they drink a lot, a lot of them teach their hair blonde.

COLIN: It's good that they speak a decent language.

ANDY: Ah, a rational traitor seems to be wearing shorts — and pinching bottoms.

PAUL: Have you been to the Lifesaver yet?



ANDY: No not yet. But I like the little girl... All the Australians I've met have been amazingly friendly. I suppose that's an offshoot from the loud bird drinking bit. Brits are really reserved. Even shaking hands in Britain you have to lead up to it, but over here they are willing to take you into their hearts and their homes and come and vomit all over your hotel room floor, as I've had somebody already do.

(Here Andy takes some half-chewed morsel out of his mouth and throws it over his shoulder.)

JUDI: Is that for good luck?
ANDY: No, it's so you don't have to sit and look at it on your plate. Now where was I? What amazes me is the lack of people here.

JUDI: Do you think the band has ever consciously tried to push an image?
ANDY: It would just be one of four personalities trying to be as normal as possible. We are all exceedingly normal. We all do normal boring things. The only jumping around on stage that happens is either caused by a) nerves, or b) we are genuinely happy about what we are doing. There's no choreography. There's no designed stage clothes. Nothing's intentional. It's just like one big long accident.

JUDI: Have you got any vices?

ANDY: I don't drink or smoke.

PAUL: Weren't you a shop-lifter when you were a teenager, or anything like that?

ANDY: No, I never stole. I used to get passed as a thief at one time, but I guess that was some time ago.

COLIN: It was to get out of his own gut?

JUDI: It must take a lot of self-discipline to give up drinking completely.

ANDY: (Flashing his teeth) YES IT MUST! Yeah, you get quite a dopamine feel coming over you at first. There's certain "buzz" abating from a whole load of things. Things that wear off and you feel like about it. I have got a personal philosophy that I can't do anything casually. I can't do it. I can't go out and play drunk because that's not me. I know I'm going hard and that's killing. I know I have to do this. I've quite certain. I like everything to be normal.

JUDI: When you are a pop star, none of those things matter anyway, surely?

ANDY: Other people think I'm a pop star. When you are right about it you don't feel like a pop star. I don't feel like doing this or that a little anyway.

JUDI: What would you do instead?

ANDY: I should draw or write. I'm jack of all trades. No, I could give it up quite easily. I haven't got a big ego.

JUDI: You're not ambitious then?

ANDY: Oh yes, I'm deadly ambitious, but I can turn it off. I can't turn emotions on and off, but I can turn urges in and off.

JUDI: What are the questions you don't like being asked?

ANDY: I don't like being asked about our name, how we met, musical influences, punk, pop, jazz, ruffie (reading in general).

PAUL: Tell me about the dynamic trio.

COLIN: How many fourth members have we had, Andy?

ANDY: One, two, three... five. Nearly everyone in Britain has been in the band at one time or another.

PAUL: Is Dave more of a soul-mate musically?

ANDY: No, I think he likes more old-fashioned things musically.

Leon from Festival diplomatically clears his throat and announces that the boys must be moving on to the next interview.

ANDY: Yeah? I'm enjoying this one.
JUDI: Do you get sick of interviews? (My God, they like us, all of a sudden I'm no vout)

ANDY: Yeah, only if they are deadly dull.
COLIN: Yeah, they get a bit boring at times. At this point the tape becomes a muddle of six or so voices... can't make any sense of it. Paul gets up to take a picture.

PAUL: Colin, will you go and sit next to Andy?

ANDY: Do I look as though I'm being interviewed?

JUDI: I wish I had a microphone. I know, I'll put my pen behind my ears.

COLIN: Cheese.

PAUL: Look interested.

ANDY: I think we should have one of those long garden seats and a few glasses of vermouth or something (Hez Andy — I thought you said you didn't drink! — Ed)

JUDI: Um, ah, um, searching desperately for... intelligent provocative, soul-searching questions... ah... what are your favourite TV shows?

ANDY: I like all sorts of things... mostly documentaries.

COLIN: I'll go along with that.

JUDI: Um, ah,

...and they are whisked away by the ladies from Festival.



Mr. Saker: MICHAEL SAKER'S ARTICLE

Vice President Soc. Social & Cultural Director T.T.A. Representative



Hi! I'm Michael Saker

I'd like to tell you about the members of the SRC, but actually I've forgotten most of their names. But then again I forget most names anyway. I don't really know why but I've learned to live with it. At times it causes problems, especially when they're good friends that you haven't seen for a couple of months and you have to talk to them for a while, but I can usually get away with it. And if not they either have the same problem, or just think I'm an egg or something.

Now if they have the same problem it's good to talk about, and can even deliver an impromptu high quality form of comedy, and the other times, when they think something or other about it, it's usually that I'm pretty bad myself, but it's mostly because I'm too "out of it" to remember them anyway. And I'll probably never see them again. But what hurts the most is when they think I'm an egg and people have got to remember that "eggs have got feelings too," so there!

I hope you don't get the wrong impression by this but once I wanted to teach children. But due to the present 2 to 5 year personal development period allotted primary education teachers etc. by the State and Federal Education Authorities I've decided to spend these years of my next years doing an art course so that I too may make a social comment like so many before me only to be hung in the hallways and dining rooms of the aristocratic ruling classes. But it's as good a living as teaching and maybe one day it will seep into the suburbs and living zones of the breaders the workers the consumers, soldiers, and voters that have for many years toiled and died so that one day the earth may also be theirs. Shared amongst everybody equal and united. Well so much for that now to reality the third dimension "the SRC" and its deadlines involvement in the affairs and bureaucracies of Alexander Mackie college of advanced unemployment or is it peltiness? Or one of Sydney's most respected drop in centres, a social asylum. It's amazing what 3 or 4 cones will do for you.

Now the SRC and me — is there life after (eggs?) well most people say there is after 2 or 3 reasonably short years it's as if it runs through my veins. Of course it just doesn't run through my veins by itself but there are also other things running through my veins. But usually just blood.

Now I don't really want to talk about the SRC. The story seems to be going okay now, but don't take the position as trainee teachers representative unless you're very safe and optimistic you can never expect to get your students cards back from the Federation as the computers often seem to swallow them up. The Social or Cultural director has got to be very social and not at all cultured, there's lots of work to do but not many to help. Hands are few when there's no money or a can of beer to put in them, when things are busy with a function.



Hi! I'm Michael Saker



Hi! I'm Michael Saker



Hi! I'm Michael Saker



Hi! I'm Michael Saker



Hi! I'm Michael Saker



Hi! I'm Michael Saker



Hi! I'm Mike Saker



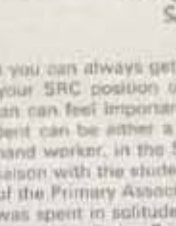
Hi! I'm Michael Saker



Hi! I'm Michael Saker



Hi! I'm Michael Saker



Hi! I'm Michael Saker



Hi! I'm Michael Saker



Hi! I'm Michael Saker



Hi! I'm Michael Saker



Hi! I'm Michael Saker



But you can always get a car sticker with your SRC position on it "Just so you can feel important," the Vice-President can be either a Vice-nothing or a hard worker, in the SRC and also as a liaison with the students. As president of the Primary Association my first year was spent in solitude as being the only member of the Primary Association merely meant that I was President of nothing. The next year was better, I was president of two others and things got so bad that we had to get students to throw paint all over the walls of the Alton Ave. common room. Now it's better there are 13 clubs, I'm not lonely, so I resigned. Now I'm just a member. As a student rep. on the primary programming committee now if you don't want to know anything about them just go on to the next paragraph and ignore this one! I was shocked when I walked into the east iron plathium sprayed wall against reasoning projected by the lecturers but most of all by the absolute guardianship of our beloved but aging (Doo! Dawn! Dawn she alone rules the primary course, with the occasional insurgent of Dr Bob Phillips from the infamous bureau of teaching and curricular studies. Hello Bob I would never have thought professionals would be cowards or be pushed around just like a principal at a school dictates and bullies, his or hers teachers and pupils. There are a lot of armchair, lounge-room and yacht-club activities and humanitarians on the committee but they never seem to get it together and banquish the tyrant and her cronies.

Of course people at Mackie in the higher income bracket than Dawn and even those at Foreaux Street are really nice people and are doing a good job at keeping the students and staff in their place and I feel that it's Australians like these that are doing such a good job in running the country.

And if you like the idea of running the country, try a position on the College Council — you too can experience having only one vote — one of only two votes student can exercise, with and/or against the fascist capitalist esteemed public image nice person, or all round general bureaucrat of your choice.

And after the meetings anybody that's interested can have a quiet drink, or a student rep. drink with the rest of the gang back in the principals office. It's just like after a game of football, in the club or after a good war, in the brokers and good gays reception hall — you know — you go on living anyway until the next round. We discuss performance college matters, eat biscuits, at times raise hands, that's when we have a chance to put our hands as it tends to be a forgone conclusion as to who holds the votes — no one seems to feel sorry about students anymore.

They seem to think that it's our problem and it's up to us to solve it, and that we shouldn't just sit around all apathetic, and conservatively ignore education and welfare act, crumbling out from under our feet. As we calmly reject the idea of us crumbling with it — Well they don't know anything anyway cause us young people just don't really give a shit about their rotten way of life anyway we've got more important things to do like looking attractive watching our weight, writing essays, being creative, or even being able to copy the right way, or just trying to help the hurt they've created so that some may have at times relief from their situation/delirium as social waste products or inferior stock — cast out. — working — living, people in a society that values Quantity of material and money before quality of person.

I write like I talk, don't I? I used to always get in trouble at school for that but I'm spun-out and the SRC is the place for you to go if you think that there's something, anything you can contribute to help students, the community, and yourself to develop into something better than what they are now. You mightn't be able to do anything, but sometimes a few people may listen and then things may be achieved. The SRC in itself is not useless unless it merely represents a useless student population. Sheep don't change anything sheep don't make anything, better, but people do.

THE GUY MORGAN page!



A BRIEF HISTORY OF THE SRC AND ITS ACTIVITIES

As anyone who has read their handbook would know, the College was founded in '58 (just after Chiko Rolls), as a teachers' college with a relatively small number of students who were working their way towards a career in the primary schools. The whole atmosphere was apparently very friendly, with a "small village" style of relationship between lecturers and students, which was quite understandable when one looks at this era.

Those were the "happy days" of college, and student fees for almost all students were paid by the Education Department, there were assured jobs and two-year training courses.

The SRC as a result of these factors was largely social with the elected members spending just about all the money (which wasn't that much in those days) on barbecues and parties. There was probably a lack of continuity with the short duration of the courses, and the students were rarely involved with politics of any kind. Anyway, the activities were at least to a degree determined by the Principal who authorised any payments that were made, and he was (understandably) happy to avoid controversial incidents of any nature.

As the College grew, the "small village" style atmosphere broke down a little and the students stretched their wings to a degree, leading to incidents such as the Principal removing fuses to "quiet down" loud music from an SRC band after a few appeals by him for less volume went unheeded (perhaps the noise made his request unclear?) and others such as when the SRC decided to sell beer without bothering with those minor legal details that our society requires.

Activities in the mid-60's to early 70's were largely social with two incidents standing out from the festive flirtations. These were the students' and SRC's involvement in the moratorium marches and demonstrations over Vietnam, which were probably the first real political actions of the SRC and these, I suspect, stirred the SRC and students to think about their role in both Mackie and society.

The other incident was the students' sit-in at the Education Department building which was a well organised affair with the police and press pre-warned (although the police took more interest than the press, one commenting it was the most pleasant bunch of demonstrators he had encountered.)

The issue was sub-standard facilities and the result was (I think) a grant of \$100,000 to the College which was spent on creating Albion Avenue's unique 2-storey toilets and its aesthetic bitumen carpark. The SRC's finances were still largely monitored by the College who also signed the cheques, a situation that existed until recent years.

In 1975 the College became a CAE with the addition of the art school. Although the emphasis in the SRC remained largely social, established (though somewhat disorganised) links with AUS had been made. The Primary students still dominated the SRC for the first few years after the link had been made, spending money mainly on social occasions.

From about '75 onwards, the SRC with a combination of art and education students, gradually started building both SRC (political) and union (servicel) sides of their operations which have always been combined at Mackie due to our relatively small number of students. This was largely due to a feeling (and activity) by some SRC members that the \$45,000 odd from student fees could be better employed on things other than just social occasions. Since then the SRC shop has been set up, the office supplied with equipment and various organisations set up. The biggest problem we face is (still) "continuity" despite the longer courses, and "new" SRC members take a while to understand what is happening before they can take an executive position or achieve things.

In the last few years the SRC (and its combined students' union) have achieved much through involvement and action by its members. We need now people with initiative and ideas, particularly from first and second years to become involved and organise the effective use of student fees for everyone's benefit in the future. We are happy to talk to anyone interested and hope you can contribute to the SRC's future history.

— Guy Morgan

Dist and Epistemology: A Chart

1. Dogmatic, cigarette-smoking, coffee-swilling, meat-munching epistemology: science, reason, reality, truth
Positivists, empiricists, Popper, Althusser
2. Lacto-vegetarian
drop truth and reality, still socialist
Hindess and Hirst
3. Sprouitarian
multiplicity, pluralism, anarchism, scepticism, relativism, reality is multiple
Feyerabend, Deleuze, Guattari, Lyotard
4. Brextherian
*Althusser - French Intellectual Fascist - eats frogs legs and snails - "Marx founded a new condiment". Pishy ideas, a communist rod herring, removes ideology by epistemological flush.

THE LAST YEAR — AN OVERVIEW OF SRC ACTIVITIES . . .

- The SRC shop has been set up on the Flinders Street campus mainly on the initiative of Garry Traynor with much help by Jude McBean and sundry others. Garry did a lot of work and spent a lot of time hassling with companies and the College with the result that we now have a well equipped and by far the cheapest art store in Sydney, over \$12,000 of capital has gone into the shop and it provides materials for both art and education students.
- Two publications have been initiated and developed — the first is the *Chimera* newspaper to deal with "heavyweight" issues concerning art, philosophy, issues and most things our contributors care to write about. The *Mackievellian News* newsletter has been developed as a general communications forum helping to link the three campuses. Both these publications rely on you for their ideas and content.
- We have sent delegates to AUS Annual Council, Special Council and regional conferences. These students have acted for our interests and made changes to AUS policy regarding student ownership of student work. We have also acted to consolidate the position of AUS as a national student union (because it is under attacks which threaten its effectiveness as a national union). This is very important in a time when education funding is being cut, jobs are hard to get and a good possibility of a loans scheme replacing the (even at present inadequate) TEAS scheme.

- The SRC acted through student reps on boards and committees and through direct representation to have "night" (5-7pm) lectures in humanities and general studies re-introduced because these "night" courses allow a much greater subject choice to students. Efforts were also made to extend the opening and closing of the College, but these, alas, were less successful.
- The SRC funded the Sports Union activities, such as visits by Kelvin Grove CAE and other sporting activities.
- The SRC through the Art Committee has funded films shown at Cumberland Street each week.
- Hot drink machines have been bought for all campuses and cold drink machines for the art campuses.
- Louise Guest has been active in her role as Women's Officer and attempted to raise feminine consciousness.
- Changes were made to the structure and running of the SRC with the appointment of a full-time store manager — the lovely Kate Wilkie — who runs and co-ordinates our stores, fills machines and does a variety of other important tasks. The witty, intelligent and wise Robyn Claremont has continued as our admin. secretary cum typist cum everything and handles the efficient, if chaotic, running of our office. The SRC decided after much debate that the five main officers of the SRC, these being the President, Treasurer, Secretary, Publications Officer and AUS Secretary, be paid up to \$20 a week because of the long hours these people work, and the fact that most other CAE's do this now.

- The SRC have examined the issue of student ownership of work and its style of exhibition within the College and made some recommendations to the College about these issues.
- The issue of storage space for student work has been examined and the matter is still being resolved.
- The SRC is preparing for the Education School's move to Oatley by discussing and organising the future structure of the SRC and arranging student facilities at the new campus.
- The SRC has supported in principle the setting up of *Network*, a communication system whereby information of interest from all art campuses in Australia can be shared and promoted.
- A Lands Committee is looking at obtaining some land for use as an "external" campus.
- The publication looking at the Biennale "White Elephant or Red Herring" was funded by the Art Committee through the SRC.
- The SRC has continued to provide social functions and entertainers for the students although on a reduced scale to that of previous years.
- Through our publications we have attempted to raise consciousness about the current issues of unemployment, technology, women's roles, educational funding, TEAS and loans. The SRC has been involved in having speakers come to the College to discuss employment prospects for education students.
- The SRC has supported and is supporting the "creative spaces" group in their moves to utilise warehouse and other space in Sydney for use by people involved in the arts.
- The SRC and the College are considering an "open day" in a public forum such as Martin Place, in around eight weeks' time. More information will be given about this soon.

— GUY MORGAN

how art materials affect YOU!

Are the materials you are working with slowly killing you? Or maybe they are just going to make you chronically ill. Scary? I hope so, because many of the materials artists are working with are much more dangerous than is commonly believed. Many people look at the warning labels on materials and figure that companies are playing it safe. This is not true. In fact, most of the warnings are vague and understated.

For example, one common paint and varnish solvent containing benzol (benzene, not to be confused with benzene [V.M.F. Naphthal] carries the following warning:

! DANGER! POISON!

MAY BE FATAL IF CAUSE
SUSPICION OF UNALLOWED
FLAMMABLE VAPOR HARMFUL
TO SKIN AND VERY IRRITANT
CONTAINS BENZOL, ACETONE
AND METHANOL
CANNOT BE MADE NONPOISONOUS

If swallowed, do not induce vomiting
CALL PHYSICIAN IMMEDIATELY
Respiratory system is highly sensitive. Avoid
inhalation of fumes and vapors. Avoid
eye contact. Wash thoroughly with water.
Keep away from heat, sparks and open
flames. Clear container after each use.
Avoid prolonged or repeated breathing
of vapor and contact with skin or eyes.
Use only with adequate ventilation.

KEEP OUT OF THE REACH OF
CHILDREN

What the label does not tell you is that benzol can penetrate the skin, has a definite cumulative action, and daily exposure to concentrations of 100 ppm (parts per million) or less will usually cause damage if continued over a protracted period of time. (Dangerous Properties of Industrial Materials by N. Irving Sax, Reinhold Publishing Corporation, New York, 1957.) It destroys the bone marrow which forms red and white blood cells and is even known to cause leukemia in some people.

Thus the major danger of benzol is not an immediate one, but a long-term effect. This is what doctors call a chronic effect, that is, one which appears gradually over a long period and is often due to repeated exposures to small amounts of material. Chronic diseases are much harder to diagnose because the symptoms are often vague and don't appear at the time of exposure. For example, the early symptoms of chronic benzol poisoning can include fatigue, headache, dizziness, nausea and loss of appetite, loss of weight and weakness. These types of symptoms can often be mistaken for other mild ailments like flu until it is too late. Such chronic reaction to art materials is the real problem, not the immediate acute type of poisoning which is much more readily diagnosed. In fact, many toxicologists believe that such chronic poisoning is much more common among artists than is generally believed.

This is not unique with artists. Similar results are being found in industry. And doctors are finding that many so-called safe substances aren't really safe at all. Occupational health and safety is as a result a growing concern of many unions which view it as a more important issue than wages.

The range of dangerous materials is very broad. It includes traditional art materials like lead paints and pottery glazes, solvents, oils, welding fumes, wood and plastic dusts from sanding, and a wide variety of new plastic materials.

Before going into the hazards of particular art materials in detail, let's take a look at how these chemicals can enter the body and what type of effects they have.

ENTRY INTO THE BODY

There are three ways in which toxic substances can enter the body: 1) by skin contact, 2) through breathing, and 3) through the mouth and the digestive system.

Skin contact is the most frequent method. Our skin has a defensive barrier consisting of an outer waxy coating and a layer of dead cells interpenetrated with a tough protein called keratin. Normally the barrier protects the skin against chemicals and physical injury. However, many substances — acids, caustic alkalis, organic solvents, peroxides, dyes, etc. — can destroy this protective coating and attack the skin layers underneath, causing various types of skin ailments.

Some chemicals — phenol (carbolic acid), benzol and aniline (a dye), for example, can even penetrate further and enter the bloodstream to travel to other parts of the body. By stripping away the protective waxy skin coating many organic solvents make it possible for other chemicals to penetrate the skin's barrier. Obviously, the way to prevent these hazardous substances from entering the body through the skin is to ensure that the chemical never comes in contact with the skin.

The second method for substances to enter the body is through breathing of their vapors or dusts. This is the most common way in which substances forming internal organs enter the body. Some of these — for example, glacial acetic acid is "stop bath" in photography,] welding fumes, oxides of lead resulting from overheating of many plastics — can immediately damage the sensitive linings of the airways and lungs. Others, especially dusts, can cause chronic diseases. One of the important factors here is the size of the particles. Fine particles are more toxic. Large particles can get trapped by the mucus of the nose and upon breathing passages, where they can be swallowed or not.

Whether or not a substance gets beyond the lungs to affect the rest of the body depends on whether it is soluble in the blood.

The third method of exposure is through the mouth and digestive system. This occurs more often than many people realize through mouth contact with contaminated hands, food and cigarettes. This can be a problem for artists whose studios are in their living quarters. The materials have to reach the lungs through the digestive system. These the body's defenses act to absorb the harmful materials into the bloodstream slowly and in small amounts. However, this is often not sufficient to prevent damage, especially with chronic cumulative poisons.

Now that we have seen the various ways in which dangerous substances can get into the body, let's look at some of the specific ways in which these substances can harm us.

THE SKIN

As mentioned earlier, many materials can harm the skin directly. In fact, skin ailments are the most frequent kind of occupational hazard caused by chemical substances. Most artists must have talked to have had at some time or another a rash, burn or other skin problem caused by working with art materials.

Skin diseases caused by chemicals are mostly of two types: direct irritation and contact dermatitis (an allergic reaction).

Chemicals that cause direct irritation or dermatitis are called primary irritants, and affect everyone who comes in contact with them. The types of damage that can appear are reddening, itching, blistering, thickening, hardening and flaking. In some cases, it takes a long time and repeated exposures to show damage. The condition lasts as long as exposure continues and usually disappears after contact is ended. Primary irritants commonly encountered by artists include acids, alkalis, organic solvents, benzol, toluol and other aromatic solvents and chlorinated hydrocarbons, turpentine, petroleum solvents, ketone, etc.), plastic materials (including many resins, monomers, catalysts, fillers, etc.) and such others as aniline, arsenic compounds and fiberglass.

Besides primary irritants which affect everybody, many substances are sensitizers and cause contact dermatitis. Sensitizers affect only some people, although some are so strong they will affect most people. Contact dermatitis doesn't occur at the first exposure. Often a person can work with a material for years before developing a sensitivity to it. After that, however, the sensitivity never disappears and even very small amounts of the material can bring on the allergic reaction.

Sensitizers work by reacting with skin proteins and changing them so that the body produces antibodies to the changed protein as if it were a foreign protein. These antibodies cause inflammation of the skin upon subsequent exposure to the chemical. A common example is allergy to poison ivy. Some common sensitizers that affect many people include many plastic materials (in particular epoxy resins and aniline hardeners), turpentine, nickel salts, formaldehyde, and wetting liquors.

Skin cancer is another type of skin disease that is of concern. The major problem is that we don't know whether many common chemicals cause cancer or not because cancers usually take 20-30 years to develop. Some substances — including arsenic compounds, coal tar dyes, paraffins, lamp black — have been definitely shown to cause cancer.

At present many doctors are concerned about the possible carcinogenic effects of many chemicals used in the plastics industry. Recently, for example, it was shown that vinyl chloride monomer causes liver cancer in workers exposed to the gas. This may pose problems for artists who use vinyl poly(vinyl chloride), since the polymer contains some trapped vinyl chloride monomer, which is released upon heating.

LUNGS

Acute lung diseases result when strong irritating substances (such as ammonia, glacial acetic acid, ozone from welding) burn the tissues of the air sacs in the lung. This results in the so-called filling with fluid, a condition called pulmonary edema, making it difficult to breathe. Pneumonia is often a complication of this disease.

Chronic lung diseases, such as chronic bronchitis and emphysema, can result from repeated exposures over several years to irritating substances. This results in damage to the larger airways in the lungs which lead to the air sacs. Over the years these chronic diseases worsen and result in more and more coughing and mucus production and an increased susceptibility to respiratory infections.

Another major form of lung disease is pulmonary fibrosis, a permanent scarring of the lung tissue. This can result from continual exposure to dusts, such as that produced from sanding wood and plastic sculptures, or silica dust from clay and some stones. This is similar to the miner's black lung.

Smoking can enormously increase the effects of toxic substances on the lungs. For example, smokers have 10 times a greater chance of getting lung cancer than do non-smokers. Non-smokers who work with asbestos have 10 times the chance of getting lung cancer as non-asbestos workers. However, smokers who work with asbestos have 100 times the chance of getting lung cancer (not 20 times!).

BLOOD

Chemical substances that affect the red and white blood cells in blood can have very serious effects. The red blood cells are essential to the transport of oxygen to body tissues and white blood cells make antibodies and help fight infection.

The actual oxygen-carrying molecule in red blood cells is hemoglobin. Chemicals like carbon monoxide and aniline can affect the hemoglobin so that it can no longer carry oxygen, leading to oxygen starvation and possibly death. Aniline, toluol, benzol, lead and other substances can damage the red blood-cell membrane and cause the cell to rupture. This can result in symptoms like weakness, fatigue, palpitations, a pale complexion and anemia. I witnessed the bone-marrow-destroying properties of benzene earlier. This results in a lack of red and white blood cells and can be fatal.

LIVER

One of the liver's main functions is to detoxify substances both those that enter the body from outside and those that the body produces. However, it has a limited capacity to do this and liver damage can result when this capacity is exceeded. Further, when the liver is damaged it can't detoxify the body's own toxins, leading to more damage.

One common symptom of liver damage is jaundice, a yellowish or greenish coloring of the skin. Other symptoms of liver damage tend to be vague and can include tenderness or swelling of the liver, nausea and loss of appetite. One type of liver disease is hepatitis or inflammation of the liver. Hepatitis known as a viral disease, but it can also be caused by chemical substances. Hepatitis will usually heal without lasting damage except in severe cases. Then scarring of the liver (cirrhosis of the liver) can result. Some typical substances that can cause liver damage are the chlorinated hydrocarbons, metals like antimony and cadmium, benzol, dioxane, alcohols, styrene, phenol, and carbon tetrachloride (ethylene glycol dimethyl ether).

NERVOUS SYSTEM

The nervous system is very susceptible to damage, and except for some of the peripheral nerves, damage is permanent. In particular, the brain can only survive for a few minutes without oxygen and so chemicals that interfere with oxygen supply cause brain damage. The brain can also be poisoned by chemical substances like carbon disulfide and hydrogen cyanide (which can be produced in thermal decomposition of polyurethanes). Heavy metals, like lead, mercury, and arsenic, can cause nerve-function disorders and even death.

Many substances have an anesthetic action and cause depression of the central nervous system. This is particularly dangerous, since you might not notice the effects, slow reflexes and drowsiness, leading possibly to accidents. Organic solvents like alcohols, chlorinated hydrocarbons, ethers and ketones are especially noted for this.

Many of the materials artists use can also affect other parts of the body. For example, kidney damage can result from exposure to lead, arsenic, cadmium, chlorinated hydrocarbons, etc.

What I have done is to give a rough idea of the types of problems an artist is likely to encounter in working with art materials. For a more complete discussion of the effects of toxic substances on the body, I suggest the book, *Work is Dangerous To Your Health*, by Jeanne Stellman, Ph.D. and Susan Gamm, M.D. (Vintage Press, paperback, New York, 1973), on which much of this discussion is based.

Solvents, acids and alkalis

Just how hazardous to health are art materials? The extent of damage to the body caused by toxic materials depends on the amount of material in artist is exposed to, the length of exposure, and the actual toxicity of the substance involved.

For example, a worker in a commercial silk screening plant for an artist who works with solvents 8 hours a day is more likely to develop chronic disease than an artist who is working with the same materials only a few hours a day. Similarly, an artist who works in acetone media for only a few years is going to have less of an exposure to the material than an artist who has worked in the same area for 10 to 15 years.

Taking these factors into account, let's take a look at the toxicity of some of the common art materials. Obviously this list is incomplete, both because of lack of space and because of the difficulty of finding out what is actually in many art materials.

SOLVENTS

In general, solvents are one of the most important hazards in art. They are used for a number of purposes: to dissolve and mix with oils, resins, varnishes, etc.; to remove paint, varnish, lacquers; to clean brushes, tools, silk screens, and even faces. As a result, artists are continuously being exposed to solvents.

Almost all organic solvents are poisonous if swallowed or inhaled in sufficient quantity, and most cause dermatitis after sufficient skin contact. High concentrations of most solvents can lead to fatigue, thus increasing the chances for mistakes and accidents. Some solvents — for example benzene, toluene and carbon tetrachloride — are so toxic that they shouldn't be used or should be used only with extreme precautions. Other solvents — for example acetone and ethanol (alcohol or grain alcohol) — are reasonably safe.

Solvents fall into several classes and are classified as follows: (1) those that are highly volatile and (2) those that are less volatile and are used in larger quantities.

Alcohols are generally anesthetics and irritants of the eyes and upper respiratory tract. In very high concentrations methanol (wood or methyl alcohol) can cause blindness, irritation, an altered vision and possibly liver and kidney damage. If swallowed it can cause blindness and even death. Ethanol, available as denatured alcohol containing some methanol, is a safe solvent. Amyl alcohol acts on the nervous system causing dizziness, nausea, vomiting, and double vision. Use: shellac, enamel paint and varnish remover, fluorescent dye solvent, common silk screening wash-up.

Aromatic hydrocarbons are among the most dangerous solvents. In general they are narcotic and irritating to the skin. The most dangerous is benzene (benzol), which causes chronic poisoning from the cumulative effect of exposure to small amounts; its effects are destruction of bone marrow, leading to loss of red and white blood cells, and sometimes leukemia. Toluol (toluene) doesn't have the long term chronic effects of benzene, but its immediate effects can be more severe if a person is exposed to a high enough concentration. With proper ventilation, however, toluol is a suggested replacement for benzol. Xylol (xylene) is somewhat more toxic than toluol and can cause some chronic blood damage. Uses: resin solvent, paint and varnish remover, fluorescent dye solvent, common silk screening wash-up.

Chlorinated hydrocarbons, like aromatic hydrocarbons, are very hazardous. Some have been used as anesthetics in the past, but were found to be too toxic. All of them dissolve the fatty layer of the skin and can cause dermatitis. They also cause liver and kidney damage.

The drinking of alcohol after exposure to chlorinated hydrocarbons can make people very sick. The most toxic chlorinated hydrocarbon is carbon tetrachloride and it shouldn't be used. It can be absorbed through the skin and exposure to small amounts can cause severe liver and kidney damage. Exposure to larger amounts can cause unconsciousness and death. Other toxic chlorinated hydrocarbons include tetrachloroethane (acetylene tetrachloride), chloroform, ethylene dichloride, perchloroethylene and trichloroethylene. The latter solvent has been shown to cause liver cancer in mice. Methylene dichloride (dichloromethane) is very volatile and high concentrations can cause lung irritation and possibly pulmonary edema and pneumonia. In general try to replace chlorinated hydrocarbons with less toxic types of solvents. Uses: Wax, oil, resin, and grease solvent.

Aliphatic hydrocarbons tend to be fairly safe solvents if used with ventilation. They have a mild anesthetic effect and, if inhaled in large quantities, cause lung irritation and possibly chemical pneumonia. They are derived from the distillation of petroleum and the various products vary in boiling point. Starting with the most volatile hydrocarbon, the petroleum distillates are naphtha (petroleum ether), gasoline, kerosene (VMAF surgical mineral spirits) and kerosene. Of these kerosene is the most dangerous, being a strong skin and lung irritant. Use: oil paint thinner, silk screening wash-up, rubber cement thinner and solvent.

Ethers are eye, nose and throat irritants and have anesthetic effects. Most common ethers are not skin irritants or sensitizers. Ethyl acetate is the least toxic, followed by methyl and amyl acetates. Methyl cellosolve acetate (ethylene glycol monomethyl ether acetate) is very toxic, causing anemia and other blood diseases. It is dangerous both through inhalation and through skin contact. Methyl cellosolve is similar to the acetate. Cellulosolve tetraethylene glycol dimethyl ether and cellosolve acetate are less toxic than the methyl counterparts. Uses: lacquer, resin and plastic solvent.

Ketones cause irritation and irritation to the eyes and upper respiratory tract in high concentrations. Their odor warning properties are a good indication of the degree of exposure. They also cause defatting of the skin upon prolonged exposure, resulting in dry, scaly, cracked skin. Acetone is one of the safest solvents (except for its high flammability) and does not seem to have any lasting effects. Methyl butyl ketone (MBK) can cause peripheral neuritis. In some cases this has resulted in paralysis of fingers and toes. Use: solvent for lacquers, oils, waxes and plastics.

Other solvents include ethylene, a very volatile, flammable solvent and anesthetic, and turpentine. The latter is a very common oil paint and varnish thinner. Turpentine is a skin irritant and sensitizer for many people; its vapors are irritating to the eyes, nose and throat upon prolonged exposure. Resulting symptoms include headaches, gastritis, asthma, and mental confusion.

AEROSOL SPRAYS

Artists are using a multitude of aerosol sprays today: lacquers, retouching sprays, paint splays, varnishes, adhesive sprays, etc. Aerosol sprays are very dangerous unless used in such a way as to not breathe the vapors. The cans contain containing possible toxic substances, such as paints, varnishes, adhesives, etc. can have long distances before settling. Further, they penetrate deep into the lungs. Besides the dangers from the substances dissolved in the sprays, the solvents and propellants are often a hazard.

For example, many sprays contain toluol and chlorinated hydrocarbons. In spray form, these solvents may be more dangerous than in liquid form because the mists contain larger quantities of solvent. Concern about propellants arises, but when it was recently disclosed that many spray products contained vinyl chloride, a chemical that has been shown to cause liver cancer. These products have supposedly been voluntarily withdrawn from the market.

Air brushes and spray guns are also hazardous since they produce fine mists which can enter the lungs.

ACIDS AND ALKALIS

Acids cause severe burning of the skin, especially when concentrated. If acid is spilled on your skin, wash with lots of water. An important safety rule with acids is to add the acid to the water, not the other way around. Strong acids include sulfuric, carbonic (phenol), chromic, hydrochloric, nitric, sulfuric, hydrofluoric and perchloric acids. Chromic acid is also a skin sensitizer. The fumes from etching metals with nitric acid are very dangerous since they burn the lungs and result in pulmonary edema (fluid in the lungs). Exposure to excessive nitric acid fumes can be fatal. Uses: cleaning metals, etching metals, dyeing.

Alkalis cause burning of the skin and ulcers. Potassium hydroxide (potash) and sodium hydroxide (caustic soda) are the most dangerous other alkalis that cause ulcers are calcium oxide (quicklime or unslaked lime), calcium hydroxide (slaked lime), sodium metasilicate (sodium silicate) and ammonia. Ammonia vapors and quicklime dust can also damage the lungs.

Painters use many different media: traditional ones like oil, tempera, encaustic, water color gouache and fresco, and modern ones, mostly acrylic, but including media like ethyl silicate vinyl acetate and other synthetics. In these media, the artist uses many different pigments, vehicle solvents (thinners, paint and varnish removers, etc.), fillers and other materials.

Pigments: Most artists are aware of the dangers of lead pigments and don't handle them in powder form because of the danger of inhaling the dust. Even ready-to-use lead paints are very dangerous to handle, and such precautions are especially washing hands and cleaning finger nails after using them is crucial to avoid accidental carrying to the mouth and subsequent ingestion. Many artists, however, are not aware that many other pigments in common use are also very toxic due to the presence of the other toxic metals. Inhalation or ingestion of these can also lead to chronic poisoning, and extreme precautions should be taken with such pigments. (See Table 1.)

Other pigments besides ones containing heavy metals can be hazardous. Lead black, for example, can cause cancer upon repeated skin contact. In addition, the toxicity of many of the modern synthetic pigments is unknown. Some of the metallic dyes used with pigments are also toxic because they contain lead or manganese. Cobalt hexamite is the safest dye.

Vehicles: The vehicles and thinners used in the traditional media (drying oils, egg yolk, gum, casein, etc.) are generally non-toxic. One exception is quicklime, which is both a skin and lung irritant, with inhalation of the dust possibly leading to chemical pneumonia. The modern synthetic vehicles are acrylic, acrylo/emul and vinyl resins. The resins themselves are non-toxic and accept for the pigments, so are the ready-to-use polymer color (water emulsions). Quick-drying acrylic thinners can be toxic by suspending pigments in solutions of certain acrylic precursors or mineral spirits, turpentine or toluol. Some have been found to be associated with the use of toluol in petroleum.

TABLE 1 — TOXIC PIGMENTS

name	toxic effects
arsenic	chronic poisoning, acute arsenic poisoning (fatal)
chromium	lung cancer, Yellow fever
cobalt	skin cancer
cadmium	all cancers, pigments
chromium	chromium hexa-valent, hexa-valent, chromium tri-valent, tri-valent
lead	lead white, lead tetraoxide, etc.
barium	barium yellow
mercury	mercurous blue, mercurous yellow, mercurous red, etc.
vanadium	Vanadium yellow

Some acrylic emulsions, particularly media, contain ammonia. This causes the odor of some acrylic emulsions and may cause irritation of the eyes, nose and throat if used without ventilation.

Varnishes: Here the solvents are the major hazard. The various solvents used include ethanol (alcohol varnish), turpentine (flatter, mastic and cooker oil resin varnish), and the lacquer solvents used with general lacquer (cellulose acetate and other synthetic resins).

CERAMICS

In ceramics, health hazards fall into two main categories: handling of the raw materials, and inhalation of the fumes during firing of the pottery.

Clays: Clays contain silicates and free silica (SiO₂). Inhalation of silica dust from handling the clay in dry form can lead to silicosis or "potter's rot." Symptoms may take years to develop and include shortness of breath, decreased chest expansion and increased susceptibility to infections. Eventually severe scarring of the lungs can result. Inhaling large quantities of loam dust, a clay with a high silica content, can also cause a

mechanical clogging of the lungs called asbestosis.

Colors and Glazes: The dusts created by the grinding and handling of some of the raw materials used for colors and glazes can also cause silicosis, especially high silica materials like flint, feldspar and talc. However, the main hazard of the colors and glazes is that many of the minerals used contain highly toxic metals. Inhalation of the dusts (eg. in spraying) or ingestion of these materials can lead to serious chronic poisoning.

Among glass minerals, those containing lead and barium carbonate are extremely toxic. The use of frits containing these materials decreases the hazard enormously since they can't be absorbed into the body. However, inhalation might still cause lung problems. In addition, the alkali oxides (K₂O, Na₂O) can damage the lungs.

Many of the colors contain toxic metals like antimony, chromium, manganese, uranium, cadmium and vanadium. Nickel compounds are skin sensitizers and possible cancer-causing agents. (See Also the article by William C. Alexander, "Ceramic Toxicology" in the Winter 73-74 issue of *Studio Pottery*, Box 174, Warner, N.H. 03275 - Eds.)

Firing: During the firing process toxic fumes and gases are produced. This can include fluorine, chlorine and sulfur dioxide from the breakdown of the raw glazes to the oxides, and also the possible release of toxic metal fumes from the glazes and colors. (With fritted glazes, the gases are not produced since that happened during the melting stage.) In addition, gas-fired furnaces are a source of carbon monoxide. Therefore it is essential that kilns be ventilated to the outside atmosphere, either by chimneys (as are used for gas-fired kilns), or through an overhead fume hood ventilation system.

TRADITIONAL SCULPTURE AND CASTING

Sculptors use a wide variety of materials, including stone, wood, metals, clay, plastics, etc. The hazards involved in working with these materials vary from mild to extreme, depending upon the particular substance. In this article, the different sculpture materials and methods are considered.

STONE

Sculptors use a variety of techniques to work stone, including chipping, grinding and carving. Some hazards are obvious, for example, the danger of eye injury from flying chips. This is why sculptors should always wear protective goggles when chipping or grinding.

But there is also a long-term danger from working with certain stones — that of silicosis. Known to many workers as "grinder's consumption" or "stonemason's disease," silicosis results from the repeated inhalation of dust containing free silica. As previously noted silicosis affects breathing capacity, resistance to respiratory disease, and results in scar tissue in the lungs.

Stones containing a large amount of free silica include quartz (100%), sandstone, brownstone, granite and onyx. Such stones as diabase, dolomite, travertine, soapstone and serpentine may contain small amounts of free silica. Some forms of marble and limestone also contain sizeable amounts of silica. To prevent inhalation of silica dust good exhaust ventilation (not just a window fan) or a respirator approved for toxic dusts is required.

Soapstone and serpentine rocks often contain asbestos as a contaminant. Asbestos can cause lung cancer and mesothelioma, a form of cancer caused only by asbestos.

If you are working with pneumatic tools, other dangers are present. A condition known as "dead fingers" or "white fingers" can develop when the fingers are dried and in a cramped position at the same time. Further, the noise from the drill, unless muffled properly, can result in loss of hearing.

WOODS

Some woods can cause dermatitis when handled. East Indian salwood and South American boxwood are toxic and others like cocobolo are primary irritants. In addition, a wide variety of woods can cause allergic reactions. These include certain members of the birch, pine, dogwood, beech, mahogany and myrtle families.

Inhalation of the dust from the sanding of wood can cause severe lung problems. Many woods are treated with chemicals like fire-retardants and fungicides. These chemicals can be inhaled along with the wood dust. Many carpenters get nasal sinus cancer. However, it is not

known whether it is due to the wood dust or to the chemical additives.

Redwood dust can cause an acute illness resembling pneumonia. It appears a few hours after exposure with symptoms of shortness of breath, dry coughing, chills, sweating, fever and weight loss. A person with this usually recovers from a first attack without any ill effects, but repeated exposures can result in lung scarring and decreased lung capacity.

MODELLING AND MOLDING MATERIALS

Modeling clays come in two basic forms, water-based and oil-based. The latter is often acid under the name plasticine.

The main hazard of clays is from the inhalation of free silica found in certain clays. If the clay is kept moist and the work area kept clear of clay dust, this is not a problem.

The dust from plaster or Paris (calcium sulfate) is irritating to the eyes and respiratory tract, and a dust mask should be worn when dust is created. When casting, sometimes metallic paints and mafic dust are added to the surface for special effects. These additives might create hazards.

METAL CASTING

Most sculptors send out large pieces to a commercial foundry to have them cast into metal by the shell molding process, but a few do their own casting. In addition, many sculptors cast small pieces of sculpture themselves by the lost-wax process. The commonest metals and alloys used are brass, brass, pewter, copper, lead, iron, aluminum and stainless steel. Gold, silver and platinum are sometimes used for small pieces.

In the casting process, the metal is melted and then poured into a suitable negative mold. The fumes of many of these metals and alloys are toxic; especially the lead found in brass and pewter. In addition, lead is sometimes added to molten bronze. Inhalation of these lead fumes or of the lead oxide dust found in the dross can cause lead poisoning.

Another problem is the carbon monoxide produced from incomplete combustion of fuels, and from the burning of sea coal and other organic materials found in the molding sand. This is a problem during pouring and for some time after.

The sand used in the shell molding process has a high silica content and the dust should not be breathed. The phenolformaldehyde or urea-formaldehyde resins used as binders can decompose from the heat of the process to produce toxic formaldehyde, phenolic and/or ammonia vapors. In addition, the hexamethylenetetramine used as a catalyst for the resin is a strong irritant to the eyes, nose and throat and a skin sensitizer.

In the lost-wax process, the fire-resistant plaster or clay used as a negative mold contains many additives which are hazardous. This includes materials with a high silica content, solvents and acids. Good ventilation or approved respirators should be used.

A variation of the lost wax process uses styrofoam to make the positive mold. Heating styrofoam, both for forming the sculpture and during the molding process itself, can release toxic gases and requires careful ventilation.

Another major hazard in casting is the large amount of heat released. Unless workers are shielded from the heat, they may get sick. In addition the infrared (IR) radiation produced can cause burns unless the skin is covered. Unless proper goggles are worn, exposure of eyes to IR may cause heat cataracts.

WELDING, SOLDERING AND BRAZING

I shall only consider the hazards involved in oxy-acetylene and electric arc welding, since these are the methods most likely to be used by sculptors.

Physical hazards in welding include the danger of fire, electric shock from arcwelding equipment, burns caused by molten metal spatters and burns caused by excessive exposure to infrared, visible and ultraviolet radiation. Infrared and visible radiation generate large amounts of heat which can cause burns, headaches, fatigue and eye damage. Ultraviolet radiation can cause severe sunburn and prolonged exposure can lead to skin tumors. Electric arc welders in particular are subject to pink eye (conjunctivitis) and some have cornea damage. These hazards point out the need for careful skin and eye protection when welding.

Chemical hazards depend on the type of welding technique and on the metals being welded. Oxyacetylene torches produce carbon dioxide, which can replace the normal oxygen in the air, carbon monoxide, which ties up the blood's hemoglobin, and also unburned acetylene, which is a mild intoxicant and can cut off the oxygen supply to cause rapid breathing and air hunger. In addition, commercial acetylene contains small amounts of other toxic gases and impurities.

Metal welding produces enough energy to convert the air's nitrogen and oxygen to nitrogen oxides and ozone. Nitrogen oxides are extremely corrosive to the eyes, nose and respiratory tract. Exposure to large amounts can cause fluid to accumulate in the lungs, swelling of the lungs and even death. Ozone is an eye, nose and throat irritant and it is a severe lung irritant, causing fluid in the lungs, hemorrhage, shortness of breath, headache and dizziness. It may also cause cancer.

If welding is carried on within 200 feet of degreasing solvents (chlorinated hydrocarbons), phosgene can be produced by the action of ultraviolet radiation on the chlorinated hydrocarbons. Even minute amounts of phosgene, a poison gas used by the Germans in World War I can be deadly, and its effects often don't appear for hours after exposure.

Metal fumes are generated by the melting of metals, metal alloys, and of the electrodes used in arc welding. In addition, fluoride fluxes produce hydrogen fluoride vapors. These vapors dissolve in the lungs to produce hydrofluoric acid, which is extremely corrosive and can cause severe burning of the lungs besides affecting teeth, bones, skin and other parts of the body.

Many metal dusts and fumes cause skin irritation and sensitization. This includes brass dust (copper, zinc, lead and tin), cadmium, nickel, titanium and chromium.

The metal fumes also cause an acute disease called metal-fume fever. This is especially true of zinc oxide fumes, but oxides of copper, iron, magnesium, nickel and cadmium can also cause metal fume fever. Symptoms are very similar to that of the flu — chills, fever, nausea, weakness and aches — and appear a few hours after exposure. Metal fume fever lasts about a day and a half, but recovery is complete.

Some metals also cause more severe problems, especially lead, cadmium, chromium and manganese. Lead poisoning is well known, chromium causes bronchial asthma and sometimes lung cancer, and manganese causes manganism, a disease resembling Parkinson's disease.

Welding of stainless steel is particularly hazardous because the nickel present in the alloy reacts at welding temperatures to produce nickel carbonyl. This is an extremely toxic vapor that causes headaches, dizziness, nervous system disorders, pulmonary edema and possibly allergic bronchial asthma. In addition nickel fumes or dust can cause lung cancer.

In addition there are problems in welding materials that may be coated with various substances. For example, many metals are coated with lead paint, mercury-containing anti-fouling paint, cadmium plating, etc.

SOLDERING AND BRAZING

These techniques are considered here because they do fall under the category of joining metals by heat. Only instead of melting the metals to be joined as in welding, a third metal of lower melting point is used to join them.

In soft soldering, the temperatures are below 700°F and tin/lead solders are used. At these temperatures there is little hazard from lead vapors unless a person spends long periods of time regularly soldering and has his or her face close to the point of soldering. The fluxes produce very irritating gases. For these reasons, there should be good ventilation. Brazing (hard or silver soldering) is considerably more hazardous because of the higher temperatures.

In addition some solders contain other toxic metals, such as cadmium or bismuth. Cadmium fumes in particular are dangerous, and can cause severe kidney disease and death. In fact, two people died in 1967 from inhaling cadmium fumes when brazing with a silver solder containing cadmium. Inhalation of flux fumes can also be hazardous.

Plastics are used in every part of our lives without any harmful effects that we know of. But the processes used to make and fabricate plastics can be very dangerous. Many occupational diseases are found among plastics workers. And sculptors using these processes are subject to the same diseases.

The degree of hazard depends on whether you are making the plastic or are working with the finished plastic (that is, sanding, cutting, carving, vacuum-forming, etc.).

Plastics consist of large numbers of long chain-like molecules made from small molecules (called monomers) linked together. These long chain-like molecules are called polymers, and the process of linking the monomers together is called polymerization. In thermoplastics the polymers lie side by side and can move when heated to fill different shapes. In thermosetting plastics, on the other hand, the long polymeric molecules are joined together or "cross-linked" by smaller molecules or by heat. The process of turning thermoplastics into thermosetting ones by cross-linking is called curing. Heating thermosetting plastics does not change their shape.

The greatest hazards arise when you are working with the monomers, solvents, fillers, catalysts, hardeners, etc. used making plastics. Many of the monomers in particular are toxic. This is what you are doing when you are working with casting laminating and foam processes.

The hazards involved in working with the finished plastics come mostly from the methods used to work the plastic. Overheating or burning of plastic can result in the release of toxic gases from the decomposition of the plastic. This can occur during sawing or machining. Heating of plastics can sometimes result in the release of unreacted monomer which is trapped in the plastic. Plastic dusts created in the sawing, sanding and polishing of plastics can create lung problems. And the glues and cements used to bond plastics often contain toxic solvents and plastic monomers.

With these factors in mind, let's look at the hazards involved in working with particular plastics. In many cases, my evaluation of the hazards of particular substances directly contradicts those of Thelma Newman in her book "Plastics as an Art Form." I feel these differences arise from her heavy reliance on "The Plastics Safety Handbook," published by the Society of Plastics Industry, Inc. (I feel as do many concerned doctors and plastics workers, that the SPI has a vested interest in underplaying occupational health and safety hazards in the plastics industry. I will try to point out major differences as they arise.

ACRYLICS

The main hazards in working with the finished acrylic sheets and blocks (Plexiglass and Lucite) are in inhalation of the dusts or heat decomposition products, and in the use of acrylic glues and cements. Cements consist either of pure solvents (dichloromethane, ethylene dichloride, trichloroethane) or of acrylic chips dissolved in these solvents. These solvents require careful ventilation. Some acrylic glues consist of acrylic monomers and have the same hazards as are involved in polymerizing these monomers as discussed below. They can be recognized by the fact that two or more components have to be mixed.

Methyl methacrylate (MMA) monomer or combinations of MMA with acrylic polymers can be used for casting and laminating. When combined with a catalyst (e.g., benzoyl peroxide), and heated, the mixture cures to a clear solid.

Methyl methacrylate is a strong skin sensitizer and irritant, and its vapors cause nausea, loss of appetite, headaches, and lowering of blood pressure. (Mrs. Newman cites only lowering of blood pressure.) Benzoyl peroxide, like most peroxides, is flammable, explosive, a skin irritant and a skin sensitizer. Peroxides are also very damaging to the eyes and care should be taken to avoid contact with the eyes.

POLYESTER

Polyester resins used for casting and laminating are very hazardous and require excellent ventilation or respirators. The normal resin consists of a nontoxic polyester dissolved in styrene monomer which acts as a cross-linker. To cure the resin, a catalyst (methyl ethyl ketone peroxide or benzoyl peroxide) is added.

Styrene monomer is an aromatic hydrocarbon, and like other aromatics, it is hazardous. The National Safety Council's "Accident Prevention Manual for Industrial Operations"

says that styrene monomer is irritating to the eyes, respiratory tract, and produces an extremely severe dermatitis. Dr. Susan Daum and Dr. Jeanne Steffman, in "Work is Dangerous To Your Health," say that styrene "can cause headaches, nausea, appetite loss and even coma. Low concentrations can damage the liver, cause blood damage and affect the nervous system." This is in direct contradiction to what Ms. Newman says about styrene. When working with polyester resins, don't use styrene as a clean-up solvent. Use acetone instead.

Some polyester resins are modified by the addition of methyl methacrylate monomer or vinyl toluene. The latter is also a hazardous aromatic hydrocarbon. The hazards of the peroxide catalysts have already been discussed.

The dangers of working with polyester resins was described by the sculptor Robert Mallary in an article called "The Art of Art is Poisoned," *Art News*, October, 1963.

EPOXY RESINS

Epoxy resins are used in laminating, casting, glues and lacquer coatings. They consist of two components: an uncured epoxy resin and a hardener. The liquid, uncured epoxy resin is a skin irritant, sensitizer and suspected cancer-causing agent because of its chemical formula. The hardeners, especially amines, are very strong sensitizers and irritants in minute quantities, and have been a major source of adverse reactions among users. During the curing process, large amounts of heat are produced which can cause dangerous burning of the hardener. Overheating of the cured resin during sawing, sanding, etc. can produce irritating decomposition products. Handling of epoxies requires careful precautions to avoid skin contact and inhalation.

POLYURETHANES

Polyurethanes are used in several forms. urethane rubber is used as a flexible mold, urethane foam can be used for sculpture or cast. They consist of two components, an isocyanate and a polyol component which also contains catalysts and other additives.

Polyurethanes are very dangerous to make. According to the Upjohn Chemical Division, "Inhalation of isocyanate vapors" has caused progressive coughing illness characterized by breathlessness, chest discomfort, and reduced pulmonary function. Massive exposure to high concentrations has caused, within minutes, irritation of the trachea and larynx and severe coughing spasms. Massive exposure may also lead to bronchitis, bronchial spasm and/or pulmonary edema (chemical pneumonitis).

Small amounts can cause allergic reactions in the lungs leading to "asthmatic attacks and respiratory distress." Isocyanates can also cause skin and eye problems. The catalysts used are irritating to eyes, lungs and upper respiratory tract, and may cause liver and kidney damage, skin sensitization and irritation. Fluorocarbon blowing agents used with foams may cause loss of feeling and unconsciousness at high concentrations.

Obviously, making polyurethanes is very hazardous. In casting polyurethanes, be sure to wear an approved respirator. Spray polyurethane foams are even more hazardous to work with because of the mist produced. Upjohn recommends that people doing spraying use chemical type chemical goggles, skin protection and air-supplied respirators or gas masks. I would recommend that only sculptors willing to take extreme precautions should use spray polyurethane foam. It is too toxic for casual use.

VINYL POLYMERS

These include polyvinyl chloride (PVC), polyvinyl acetate (PVA), PVC/PVA copolymers and polyvinyl alcohol. They are thermoplastics and can be heat molded, vacuum formed, etc. PVC can be room-temperature with peroxides in heat welding of PVC 300°F. care must be taken to avoid breathing toxic hydrogen chloride fumes released from the decomposition of PVC. There might be some hazard in heating PVC pellets or powder if the polymer contains any unreacted vinyl chloride monomer, since the monomer has been shown to cause chemical hepatitis and liver cancer at low levels. The solvents used can be toxic.

POLYSTYRENES

Polystyrene is available as sheets which can be cut, shaped, etc., as molding pellets which can be fused, as foam sheets (Styrofoam) which can be cut with hot wire cutters, or as expandable polystyrene beads for foam molding. Cutting or sawing of factory-fresh or very large slabs of Styrofoam releases the colorless odorless gas methyl chloride, and can release any trapped

styrene monomer. In small amounts methyl chloride can cause symptoms of drunkenness in large amounts, dizziness, staggering and even death. Open flames should be avoided when using expandable polystyrene beads since they contain flammable pentane gas. Some styrene cements used to cement styrofoam contain styrene monomer.

OTHERS

Room temperature vulcanizing (RTV) silicone rubber is a common mold-making material. A two-component system, the only hazard is with the catalyst component. Rubber cement used in paste-up, is dissolved in petroleum distillates. Prolonged breathing of these vapors should be avoided. Fluorocarbons (eg. Teflon, PTFE) are safe unless heated to decomposition. The decomposition products can cause polymer fume fever, which is similar to metal fume fever. Moderate heat, for example, cigarettes, can create this problem.

ADDITIVES

There are many different types of additives, including fillers, colorants, stabilizers, plasticizers, etc. I shall only comment on a few of the more hazardous. Fiberglass is commonly used in laminating. It is very irritating to the skin and causes many fine cuts which make it easier for other chemicals to cause irritation. Dust respirators should be worn, when sanding plastics containing fiberglass, since the glass dust can cause severe lung damage and behaves like asbestos in animals. Many fillers contain free silica, and inhalation of the dust should be avoided. Probably the most hazardous substance to use is asbestos. Inhalation of even small amounts of asbestos dust can cause cancer. In general, many additives were hazardous, so skin contact and inhalation of vapors or dusts should be avoided.

PRINT MAKING

Print-making methods use a variety of solvents and solvent mixtures, primarily in cleaning. Aqueous aromatic hydrocarbons (benzol, xylol, and toluol) and other lacquer solvents are hazardous and should be used with adequate ventilation. Benzol should be avoided. Cleaning should be done with as nontoxic a solvent as possible.

Inks used in black and white printing usually contain carbon black. Repeated contact with carbon black can cause skin cancer years later. Avoidance of skin contact and careful washing after exposure is helpful.

SILK SCREENING

In silk screening, the solvents are the biggest health hazards, with the greatest exposure coming during printing, drying of the prints and wash-up. Very careful ventilation of work areas is needed to prevent a dangerous build-up of vapors in the air. Usually, drying of the prints should be done in an enclosed drying cabinet with exhaust ventilation, if at all possible. Since most of the solvents are skin irritants, skin contact with them should be avoided as much as possible through use of gloves, especially during wash-ups.

The solvents used depend on the type of ink and the stencil or media used. For example, most poster, enamel and fluorescent inks can be washed up with mineral spirits. Many companies suggest using aromatic solvents like xylol for many inks. Although these are often more efficient, they are also more toxic. Lacquer inks and plastic inks, on the other hand, require the more toxic lacquer solvents like MEK, acetone, etc.

Less is known about the toxicity of the inks themselves. Many, especially the oil-based inks, contain the same pigments as do prints. Unfortunately, it is difficult to get information on the composition of the various inks and tones since most companies are reluctant to divulge this information. It is known that one pattern, since it conducted a medical survey to see if prolonged exposure to printing inks causes lung cancer.

RELIEF PRINTING

Traditional wood-cutting and engraving present few hazards. Modern relief methods may be more hazardous, especially those using solvents and glues. Linoleum etching uses caustic soda (sodium hydroxide) which can cause very severe skin burns.

INTAGLIO

Etching grounds basically consist of asphaltum (pitch in oil or turpentine base), beeswax and resin. Liquid grounds also contain solvents like benzene, or in the case of some commercial ones, ether, chloroform or benzol. The asphalt or pitch is a skin irritant and may cause skin cancer. Resin dust is a sensitizer and its inhalation can cause hayfever-type symptoms and possible asthma. This is particularly a problem in aquatinting.

One of the greatest hazards in intaglio is the etches, particularly the acids. Acids, especially when concentrated, cause severe skin burns. Eye damage from splashes can also be very dangerous. One rule is to always add acid to water, never the reverse. Fuming acid etching of copper and zinc produces highly toxic nitrogen oxide fumes which can dissolve in the lungs to cause pulmonary edema and chemical pneumonia. Hydrochloric acid (used in Dutch mordant) can cause similar severe lung problems. Potassium chlorate, also used in Dutch mordant, is a skin irritant and when mixed with organic materials is explosive. Mixing of the hydrochloric acid and potassium chlorate may release some poisonous chlorine gas. Potassium dichromate, used in some etches, is a strong skin irritant and strong sensitizer. It can cause deep ulcerous burns to skin and nasal membranes, even to the extent of perforating the nasal septum. Exposure to vapors or dust may cause lung cancer.

LITHOGRAPHY

One of the biggest hazards in lithography is potassium dichromate. It is used in a variety of art materials, including some desensitizing etches and fountain solutions. Chromium, used in one type of desensitizing etch, is similar to dichromates in toxicity. Desensitizing etches also use nitric and phosphoric acids. The danger here is in handling of concentrated acids. Litho crayons and litho tints contain lampblack, which may cause skin cancer. Some tints (French stuff) or tin-tinners materials contain asbestos, which can cause mesothelioma, lung cancer and neurofibromatosis (rare cancer). An asbestos-free tint should be chosen.

PHOTOGRAPHY

Many of the chemicals used in photographic processing can cause severe skin problems, and in some cases, lung problems through inhalation of dusts and vapors. The greatest hazard occurs during the preparation and handling of concentrated stock solutions of the various chemicals. During these steps in particular, it is essential to wear protective gloves and goggles (to protect against splashes).

Special care should be taken to avoid skin contact with powders and to avoid stirring up dusts which can be inhaled. Good ventilation is important to get rid of vapors, especially from the fixer.

Black-and-white processing includes developing, stop bath, fixing and rinsing steps. The developer usually consists of hydroquinone and Metol (p-aminomethyl p-aminophenol sulfates), both of which cause severe skin irritation and allergic reactions. These are dissolved in an alkaline solution containing sodium sulfite and sodium carbonate or sodium hydroxide.

These chemicals can cause skin irritations or even burns. Hands should never be put into the developer. If skin contact does occur, the skin should be washed copiously with water and then with an acid-type skin cleanser (to be discussed in a future article).

The stop-bath consists of a weak solution of acetic acid. The concentrated acid can cause burns, and inhalation of the vapors can irritate the breathing passages and throat. Potassium chrome alum, sometimes used as a stop-hardener, contains chromium and can cause ulcerations especially in cuts and nasal membranes.

The fixer usually contains sodium sulfite, acetic acid, and sodium thiosulfate (hypo), boric acid and potassium alum. The mixture of sodium sulfite and acetic acid produces sulfur dioxide which is extremely corrosive to the lungs. Potassium alum, a hardener, is a weak sensitizer and may cause some skin dermatitis.

Many intensifiers (bleaches) can be very dangerous. The common two-component chrome intensifiers contain potassium dichromate and hydrochloric acid. The separate components can cause burns, and the mixture produces chromic acid. Its vapors are very corrosive and may cause lung cancer. Handling of the powder of another intensifier, mercuric chloride, is very hazardous because of possible inhalation of the dusts and resultant mercury poisoning.

The commonest reducer contains potassium ferricyanide. If it comes into contact with heat or concentrated acids, the extremely poisonous hydrogen cyanide gas may be released.

Mercuric and stabilizers often contain formaldehyde which is very poisonous, extremely irritating to the eyes, throat and breathing passages, and can cause dermatitis, severe allergies and asthma. Some of the solutions used to clean negatives contain harmful chlorinated hydrocarbons.

Color processing involves many of the same chemicals as are used in black-and-white processing. Developers also contain dye couplers, which can cause severe skin problems, and some solutions contain toxic organic solvents.

SAFETY IN THE STUDIO—LESS TOXIC MATERIALS

One of the best ways to decrease or eliminate a health hazard is to find a less toxic substitute. In particular, benzol, carbon tetrachloride and asbestos are so highly toxic that it is extremely difficult for most artists to work safely with these materials. So substitutes should be found whenever they are used. This rule is true in general of all materials that can cause cancer, since there is evidence that there is no safe level of exposure to a carcinogen. However, the rule can also be extended to other materials. Whenever you can choose a less toxic solvent in preference to one that is more toxic, for example, you are substantially decreasing possible health hazards.

VENTILATION

One of the most important factors in designing a studio — and one of the most neglected — is adequate ventilation. There are two types of ventilation. Local or exhaust ventilation, removes toxic vapors, dusts, etc., at their source before they can contaminate the air and people's breathing zones. General or dilution ventilation dilutes the toxic vapors with fresh air to lower their concentration to a safer level. Obviously, therefore, the best method is preferred.

Local ventilation is particularly important in situations where highly toxic materials or large amounts of toxic materials are being produced. Examples are welding, carbon arc, acid baths for etching (particularly with nitric acid), silk screen drying and wash-up, spraying operations, grinding and sanding, and processes producing asbestos-containing dusts.

A local exhaust system consists of an exhaust hood to trap the contaminant, a duct system to carry the contaminant to the outside, an exhaust fan and, sometimes, air-cleaning equipment to prevent the toxic materials from polluting the atmosphere.

There are many factors that affect the design and placement of an exhaust hood. First, the shape of the hood greatly affects its efficiency. Since the hood opening draws in air from all directions, enclosing the operation so that air is drawn only from the direction designed means that less air is required. For example, the flange at the end of the movable duct for exhaust welding fumes (figure 1) prevent the air from behind the duct from entering the duct. Similarly the spray booth type of hood (figure 2) encloses the spraying operation so that the exhaust fan is only exhausting air that is contaminated with spray. Note the baffles in the spray booth which ensure an even distribution of air also catch much of the liquid so that the fan doesn't get clogged.

Second, the hood should be located so that the natural velocity of the contaminant will be in the direction of the hood opening. For example, the exhaust duct of the spray booth in figure 2 is at the rear of the booth because that is the direction in which the spray is aimed. Similarly, since hot fumes rise, the use of updrafts for carbon arcs takes advantage of this natural tendency. Most carbon arcs are equipped with attachments for overhead flexible ducts. Also, since solvent vapors are not heavier than air, they do not fall and exhaust inlets should be at the level the vapors are produced.

Third, the hood should be placed as close as possible to the source of the contaminant. As shown in figure 3, the velocity of the exhaust drops off very sharply as the distance from the hood increases. To trap a contaminant and direct it into the hood, the air velocity at the source of contamination must be greater than the natural velocity of the contaminant and surrounding air. The further away the hood is, the more powerful the fan will have to be to achieve this capture velocity at the source of contamination.

Fourth, care should be taken in designing and locating the hood so that contaminants do not pass through people's breathing zones before being trapped by the hood. This would negate the whole purpose of the local exhaust system.

Finally, make sure that you have provided for an adequate source of make-up air to replace the air entering the hood. Otherwise the system does not work properly.

The duct system should be made of materials that won't be affected by the contaminant. For example, if you are exhausting organic solvents, the ducts should be fire-proof. To keep air flowing smoothly, ducts should be circular with as few bends as possible, and those bends should be gradual. With ducts, duct air velocity should be sufficient to keep dusts from settling.

The type and capacity of the fan to be used depends on the contaminants and the required air velocity. For most purposes propeller fans are sufficient. When exhausting solvents, the fan must be explosion-proof. For more details, refer to "Industrial Ventilation — A Manual of Recommended Practice."

General Ventilation is used commonly to heat or cool the air to make it comfortable. But it can also be used to provide the make-up air for a local exhaust system and to bring in fresh air from outside to dilute the concentration of a toxic material to a safer level. In the first case, a recirculating type of system is common (eg. air conditioned), but in some cases a recirculating system will actually build up the concentration of toxic materials.

A general ventilation system usually consists of an intake and outlets, blowers, exhaust fans and ducting. Often, an open door or other source of comfortable make-up air and a window exhaust fan of appropriate capacity are adequate.

In designing a dilution ventilation system, there are several factors to consider. First, make sure that there is enough make-up air entering the room to replace that being exhausted. Second, make sure that the air inlet and outlet are sufficiently far apart that there is no chance of contaminated air from the outlet getting back in. Third, design the air flow so that it reaches people before being contaminated. Finally, make sure that the air is evenly distributed throughout the room and there are no uncomfortable drafts.

The actual flow rate of air needed to dilute a contaminant to a safe level depends on the toxicity of the material, the amount of material escaping into the air, and the period of time over which this occurs. This can be calculated since all the above variables are known or can be measured.

Finally, the ventilation system — whether local or general — should be regularly checked to see if it is operating correctly.

FLAMMABLE SOLVENTS

The storage and handling of flammable solvents is usually regulated by the Fire Department. These regulations vary from city to city. New York City has one of the strictest fire prevention codes in the country. For example, in New York you need a fire permit to store or use more than five gallons of flammable solvent-welders also require a fire permit.

The flammability of a solvent is determined mostly by its flash point, which is the lowest temperature at which a liquid gives off enough vapors to form an ignitable mixture with air, and can cause a flame to form when a source of ignition is present. This source of ignition can be a flame, a lit cigarette, a spark, static electricity, etc. The National Fire Protection Association, in its NFPA Standard, "Flammable and Combustible Liquids Code," classifies liquids as flammable if their flash point is below 100°F, and as combustible if the flash point is above 100°F. Flammable liquids are subdivided into Classes IA, IB and IC, and combustible liquids are subdivided into Classes II and III.

As the adjoining table shows, many of the common solvents are highly flammable at room temperatures. In addition mixtures are often as flammable as the most flammable component since one component catches fire can set off the other components.

Particular care should be taken with Class I and II solvents. They should not be stored in open or glass containers, but in approved safety containers. Containers with screw lids are not good because they can't release built-up pressure. Waste flammable liquids should similarly be stored in approved safety-type disposal cans. Large quantities of flammable liquids should be stored in approved storage cabinets.

Another essential in a studio or workshop is a readily available fire extinguisher for fire extinguishers. If you are using flammable solvents you should get a Class B (flammable liquid) fire extinguisher. The best type is a dry chemical type.

HOUSEKEEPING PROCEDURES

Adequate housekeeping or clean-up procedures are essential for safety. Spills should be cleaned up immediately. With liquids, use paper towels, rags or newspapers and store in closed containers until ready to dispose. Burning is one of the best disposal methods. If the spill is large and the liquid hazardous, wear a respirator. Similar procedures should be used in cleaning up with solvents, for example, in silk screen wash-up.

In cleaning up dusts, never sweep. Just stir up the dust so you breathe it. Instead use vacuuming or wet mopping for both. Very toxic dusts (eg asbestos-containing dusts) should be vacuumed with industrial-type vacuum cleaners into single use bags that can be removed and sealed. Dust is a problem in particular in wood-turning and sanding, stonework, pottery, clay and plaster modeling, and some plastic work.

You should not eat or smoke in the studio and if you live and work in the same space, a separate area should be set aside for working. Work clothes should be washed separate from other clothes to avoid contamination. And, finally, be very careful about exposing children to hazardous materials. In general, children are much more susceptible to toxic substances.

PERSONAL PROTECTION RESPIRATORS

The Occupational Safety and Health Act of 1970 states that in industry, respirators are allowed only for emergency use, when local exhaust ventilation is not possible or as a temporary measure while local exhaust systems are being installed. This is a good rule for anybody to follow, since local exhaust systems are more efficient and safer than respirators. Respirators are also uncomfortable to wear over extended periods of time. Further, since respirators are difficult to breathe through, people with heart or breathing difficulties should consult their doctor before trying a respirator.

Respirators are of two basic types: air-supplying and air-purifying. Air-supplying respirators provide a source of uncontaminated air for the person to breathe. The air can come from a self-contained breathing apparatus (SCBA), separate tanks of compressed air or from a compressor. This type of respirator is fairly expensive and needed only in cases of oxygen deficiency or with materials that are immediately harmful to life or health. In this category I would include welding with toxic vapors or fumes, fumes, spraying with polyurethane foam and aerosol producing strategies dust.

Air-purifying respirators, on the other hand, remove the toxic materials from the air you are breathing. These include full gas masks, covering the entire face, and full-face, covering the mouth, nose and often chin. These respirators consist of two basic parts: the face mask and the cartridge, canister or filter which removes the contaminant. There are different cartridges and filters for different contaminants. A cartridge or filter intended for one contaminant will not work for other types. There are separate cartridges available for organic vapors (alk screening, solvents, plastics, casting and molding, etc), for acid gases (nitric acid etching — use full face gas mask — and for hydrochloric acid etching) and for carbon monoxide (in foundries — use full face gas mask). There are also different filters for dusts, fumes and mists. Filters should be used only for purposes specified, eg dusts (cellulose, ceramics, pigments, fumes (condensed metal vapors, especially in welding and foundry work) or mists (paint and other spray). Combinations of cartridges and filters and combinations of different types of cartridges are also available.

In choosing a respirator, there are several factors to take into account. First, the respirator should have a Bureau of Mines or NIOSH (National Institute of Occupational Safety and Health) approval. These approvals are good only if the respirator is used for the purpose stated on the approval.

Second, the respirator you choose should fit properly. If air can leak in around the edges, it is worse than useless, since you will have a false sense of security. People have differently shaped faces, so a respirator that fits one person will not necessarily fit someone else. If it doesn't fit, try another size or model. To test the fit, close off the intake valve and breathe in. No air should leak in. Another test is to close the outlet valve and breathe out. No air should escape.

Finally, the respirator you choose should be comfortable. If it doesn't, you will find that you often won't wear it when you should. Air-purifying respirators normally cost about \$10-\$15. Air-supplied types are much more expensive. 3M Company puts out an approved respirator single-use dust mask.

Cartridges and filters have to be changed regularly. The purifying chemicals in cartridges eventually get used up and vapors or gases start to enter the mask. The time this takes depends on the frequency and length of use and level of exposure. With many contaminants, you can go by colour. However, with colourless or highly toxic gases, use full face mask or air-supplying respirator. Filters get clogged, which is easy to tell by the increased difficulty in breathing.

Respirators should be regularly checked for damage, cleaned and disinfected. One recommended cleaning procedure follows:

- 1) Remove filters, cartridges or canisters.
- 2) Wash face piece and any tubing in soap and water, using a hardbrush to remove dirt.
- 3) Rinse completely in warm water.
- 4) Air dry in a clean area. Don't heat.
- 5) Clean other parts as recommended by manufacturer.
- 6) Inspect head straps, valves, etc., and replace with new parts if needed.
- 7) Insert cartridge, canister or filter, making sure there is a tight seal.
- 8) Place in a plastic bag or container for storage. The respirator should never be stored near chemicals, heat, light, dust.

For further information concerning respirators, consult the American National Standards Institute Booklet, "Practice for Respirator Protection," ANSI Z88.2-1955, available from ANSI at 1430 Broadway, New York, NY, 10018.

SKIN PROTECTION

Dermatitis is one of the biggest dangers of working with art materials. The best way to prevent dermatitis is to prevent hazardous substances contact with the skin, particularly hands. The best way to do this is to wear plastic or rubber gloves, especially when working with organic solvents, acids and caustics. There are two basic measurements in choosing the type of glove: first, that the glove is impervious to the materials being used; and, second, that the glove allows the degree of "feel" required for your art.

For many purposes, polyvinyl gloves are suitable. There are several types, including cheap disposable "surgeon's gloves" and heavier latex gloves for greater comfort. These polyvinyl gloves protect against most solvents except those containing large amounts of ketones (see above).

Butyl rubber or natural rubber gloves will protect against ketones, but not against aromatic solvents (toluol, xylol, glycol ether), most chlorinated hydrocarbons, and oily-phosphate film protection against petroleum distillates (naphthalene, spots, kerosene) and acids. Neoprene rubber gloves have almost the exact opposite characteristics of the other rubbers.

For work with acids and caustics, either polyvinyl chloride or neoprene rubber is best. For work with concentrated solutions, the gloves should be the gauntlet type with a cuff to turn back the acid or caustic.

If you cannot wear gloves, then the use of barrier creams ("invisible gloves") might help, by providing an impermeable barrier between the skin and toxic material. There are different types of barrier creams, some water-soluble and others water-insoluble. Silicone types are supposed to be the best. These barrier creams have to be renewed regularly. After use, the barrier creams are washed off with a mild soap and water.

In cleaning hands, it is important to wash carefully and frequently with soap and water (especially before eating, smoking, etc). Do not use harsh or abrasive soaps, since these can cause dermatitis themselves and just worsen the problem. With some materials, including paints, ink, oil, etc., waterless hand cleansers are helpful. They are often available in hardware and art supply stores. Cleansers containing kerosene are not recommended because of their defatting action. After washing with these cleansers, you should also wash with plenty of soap and water. Then use a hand lotion or cream containing lanolin to replace any skin oils lost.

FACE AND EYE PROTECTION

The face and eyes must be protected against a variety of hazards, including impact (chipping, grinding, etc), radiation (welding, carbon arc, foundries) and chemical splash (acids, solvents, etc). Safety equipment that is chosen to protect against a particular hazard should state required air velocity. For most purposes propeller fans are sufficient. When exhausting solvents, the fan must be explosion-proof. For more details refer to "Industrial Ventilation — A Manual of Recommended Practice."

General Ventilation is used commonly to heat or cool the air to make it comfortable. But it can also be used to provide the make-up air for a local exhaust system and to bring in fresh air from outside to dilute the concentration of a toxic material to a safer level. In the first case, a recirculating type of system is common (eg air conditioners), but in some cases a recirculating system will actually build up the concentration of toxic materials.

A general ventilation system usually consists of air inlets and outlets, blowers, exhaust fans and ducting. Often, an open door or other source of comfortable make-up air and a window exhaust fan of appropriate capacity are adequate.

Safety equipment that is chosen to protect against a particular hazard should state that it meets the standards of the American National Standards Institute's "Practice for Occupational and Educational Eye and Face Protection" (ANSI publication Z87.1).

Protection against impact is of three types: spectacles with impact resistant lenses and side shields, flexible or cushioned goggles, and chipping or eyecup goggles. Models are available that can be worn with or without glasses. For some types of exposures, a combination of goggles and face shield is advised.

The type of protection against radiation depends on the type of radiation to which you are exposed. Carbon arc and electric welding require protection against ultraviolet, visible and infrared light. The latter two are felt as heat. In oxyacetylene and handily work with molten metal the concern is mostly with protection against the visible and infrared light. The latter two are felt as heat. In oxyacetylene and foundry work with molten metal the concern is mostly with protection against the visible and infrared light. The type and degree of filtering needed in lenses will depend on these factors. Welding masks often cover the entire face to also protect the skin.

Protection against chemical splash depends on the severity of the problem. For work with hot, concentrated acids in large amounts, complete and hood covering head and shoulders are available. In other cases face shields or safety chemical goggles with sufficient ventilation are sufficient. If you are working with irritating vapors, you might choose goggles without ventilation in any case. If you get anything in your eyes, wash with lots of water for about 15 min, neutralize and consult a doctor.

OTHER PROTECTIVE CLOTHING

Protective clothing is also available to protect other parts of the body besides the skin, face and eyes. Footwear clothing is effective against ultraviolet and visible light, but heat is another matter. Leather aprons or clothing usually give good protection. This includes leather gloves for handling hot objects. In some cases, asbestos aprons or gloves might be necessary. Leather clothing also gives protection against fire and paint splashing clothes, metal and sparks. In some cases, protective shoes and feet might be needed.

For protection against chemical splash, plastic or cloth aprons are available in a variety of materials. In addition you can buy protective leggings and sleeves.

EAR PROTECTION

Excessive noise can have both temporary and permanent effects on the body. This includes not only hearing losses, but also heart disease, gastrointestinal disorders, allergies, etc. Noise levels are measured in decibels (dB) on a logarithmic scale such as that every increase of 10dB means that the noise intensity has increased tenfold. The table below lists the noise levels of some activities.

ordinary conversation	60dB
grinding	80-85dB
spraying	80-85dB
machine shop	80-85dB
pneumatic drill	90-95dB
ceiling saw	100-105dB
woodworking shop	110dB

The Occupational Safety and Health Administration (OSHA) has set a maximum permissible noise level of 90dB for an eight-hour working day. Many doctors think that this level is much too high.

The best way to solve excessive noise problems is to eliminate them at their source, just like the best way to control toxic materials is by local exhaust ventilation. Eliminating noise can be done in a variety of ways, including keeping machines in good repair, using where needed, mounting on rubber or other absorbent materials to reduce vibration, use of silencers and mufflers, etc. In addition there is the possibility of buying quieter machines.

If the above methods fail to work, then you can use ear muffs or ear plugs. Approved ear muffs are best because they don't have to be personally fitted. Ear plugs come in a variety of sizes and should be fitted by trained personnel. The use of improvised materials like wax or cotton is not recommended and may be harmful.

S R C

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